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Allied Health Regional Workforce Analysis Central California

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Overview

Achieving a culturally competent health care workforce is a major focus area for The California Endowment. Part of any strategy to reach this goal should include the large number of health care workers, often referred to as the *allied health workforce*. This group is comprised of professionals who provide a range of diagnostic, technical, therapeutic, and direct patient care services, as well as support services. The field of allied health ranges from entry-level occupations requiring minimal educational investment to highly specialized occupations requiring advanced-degree training for entry into practice.

Objective and Approach

The objective of this series of regional reports is to describe and analyze the basic components of the allied health care workforce in each of The California Endowment regions: the general population, which represents both an available pool of health care labor and the body of health care consumers, the current health professions workforce, and the graduates of selected allied health education programs. Although the analysis for these reports is multifaceted, a key theme that is highlighted throughout is the racial and ethnic composition of these components of the workforce. These reports also include information on current wage levels and projected occupational employment that can be used to evaluate the relationships among wages, employment opportunities, and characteristics of the workforce and population. This report is focused on Central California (The California Endowment-designated Central Valley Region), which encompasses 18 counties: Amador, Calaveras, Fresno, Inyo, Kern, Kings, Madera, Mariposa, Merced, Mono, Monterey, San Benito, San Joaquin, San Luis Obispo, Santa Cruz, Stanislaus, Tulare and Tuolumne.

Twenty-two (22) allied health occupations were selected for a detailed analysis based on several criteria. First, workers in many of these occupations serve as the initial contact, and sometimes the only contact, in the health care system for poor, underserved, or special needs communities. Second, many of these occupations represent a substantial number of job opportunities. They can be fast-growing occupations, occupations whose large workforce provides many job opportunities due to sheer size, or occupations that are both large and fast-growing. Finally, these occupations are characterized by a broad range of both educational requirements and practice settings. The spectrum of education levels ranges from certificate programs that can be completed in less than one year to master's level training. Professional practice settings include inpatient, outpatient, community and home. The following occupations are described and analyzed in this report:

- Dental Assistant
- Dental Hygienist
- Medical Assistant
- Pharmacy Technician
- Home Health Aide
- Nursing Assistant
- Licensed Vocational Nurse
- Nurse Practitioner (Advanced Practice Nurse)
- Physician Assistant
- Respiratory Therapist
- Radiologic Technologists
- EMT/Paramedic
- Clinical Laboratory Scientist
- Psychiatric Technician
- Mental Health Counselor
- Substance Abuse/Behavioral Disorder Counselor
- Mental Health/Substance Abuse Social Worker
- Medical/Public Health Social Worker
- Geriatric Social Worker
- Public/Community Health Educator
- Community Health Worker
- Health Care Interpreter

Principal Data Sources

Regional Population

The principal sources of data used to describe the region's current and projected population (over the period 2005-2030) were the California Department of Finance's Demographic Research Unit and the American Community Survey (ACS) Public Use Microdata Sample (PUMS) for California. In some cases, American Community Survey (ACS) PUMS data from 2006 alone were used, but in other instances PUMS data from both 2005 and 2006 were combined in order to perform more detailed analysis. The estimates presented using this combined dataset should be interpreted as averages during the two-year period 2005-2006.

Current Health Professions Workforce

The principal source of data used to describe the Central California Region's current health professions workforce was the 2005 and 2006 American Community Survey (ACS) Public Use Microdata Sample (PUMS) for California. PUMS data from the 2005 and 2006 American Community Survey were combined for the Central California Region in order to obtain a larger number of observations, thus allowing more detailed analyses. As noted above, the estimates presented using this combined dataset should be interpreted as averages during the two-year period 2005-2006.

Education

Excepting nurse practitioners, all education data were derived from the U.S. Department of Education's Integrated Postsecondary Education Data System (IPEDS). IPEDS is the most comprehensive source for postsecondary education data available. Though schools occasionally mistakenly report graduates of a program that they do not actually offer, we have made every effort to verify the existence of a program when student data were reported for it (short of combing through the program catalog for every reporting college, university, or other post-secondary institution). Nurse practitioner program data were derived from the 2006 and 2007 California Board of Registered Nursing (BRN) Annual Schools Survey.

Current and Projected Employment and Median Wages

The 2006 county-level estimates of total employment, 2007 county-level estimates of hourly/annual wages, and 2004-2104 county-level employment projections are from the California Employment Development Department (EDD).

Occupational Descriptions

Occupational titles are defined by the Standard Occupation Classification (SOC) system. Descriptions of each occupation and its respective scope of practice are from the 2006–2007 edition of the Occupational Outlook Handbook, published by the U.S. Bureau of Labor Statistics (BLS).

Major Findings

The following section details the findings for each major components of the report, including the region's current population, projected population, current health professions workforce, recent graduates of selected health professions education programs, racial and ethnic representation in these education programs and projected occupational

employment. These sections are followed by a summary of the findings as a whole.

Current Population

Collectively, the Central California Region's white and Latino populations represent more than 85% of the region's total population. This combined proportion is slightly larger in comparison to California as a whole (roughly 79%). The Asian, African-American and multiracial populations, in contrast, represent smaller proportions of the Central California Region's total population than in California as a whole.

Although the Central California Region includes 18 different counties, roughly 75% of the region's population lives in the six largest counties: Fresno, Kern, San Joaquin, Stanislaus, Monterey and Tulare. These counties are more racially and ethnically diverse than others in the region. In each of these six counties, at least half of the general population is non-white. In contrast, the non-white population in the region's less populous counties never represents more than one-quarter of the total.

Many of the key findings involve the region's growing Latino population. The Latino population is younger, less well educated, earns substantially lower wages, and, with a high percentage of limited-English speakers, is potentially linguistically isolated. In terms of earnings and educational attainment, Native American, Native Hawaiian and African-American populations also lag well behind the region's white and Asian populations. However, the statistical evidence indicates that these gaps are more profound for Latinos by comparison.

- The median age of the region's Latino population is just 29, much younger than the region's African American population (34), Asian population (36), and white population (42).
- During the period 2005-2006, more than 40% of the region's Latino population reported speaking English either "not well" or "not at all."
- In the region's population over the age of 25, just 6% of Latinos reported having attained a bachelor's degree or higher, compared with 16% of African Americans, 26% of whites, and 29% of Asians.
- The median wage for Latinos is much lower than other groups. During the period 2005-2006, half of all Latinos in the region earned $22,000 per year or less. This is roughly $10,000 per year less than the median wage for Asians and approximately $15,000 per year less than the median wage for Whites.

… training for entry-level occupations, such as Medical Assisting and Dental Assisting, is concentrated in the region's private, for-profit institutions.

Projected Population

The Central California Region is projected to grow by roughly three million people over the next two decades. More than half of this population growth is projected to occur in the region's three largest counties: Fresno, Kern and San Joaquin. Latino population growth is projected to represent approximately 75% of this total projected growth.

The region's population over the age of 65 is expected to grow rapidly in the coming two decades, from roughly 500,000 to more than 1.2 million. The over-65 segment is the fastest-growing age segment of the population in every county of the region. In five of the counties (Amador, Calaveras, Inyo, Mariposa and Tuolumne), population projections indicate that by 2030 the over-65 population will come to represent more than half of the total population.

Current Health Professions Workforce

In this report, we use representation in the general labor force as a benchmark to analyze representation of specific groups (race, ethnicity and gender) in the region's current health professions workforce. Two main findings that emerged from this analysis are the under representation of Latinos in higher paying health professions that require greater levels of educational investment, and in contrast, the over representation of Asians in these same high-paying professions. A third key finding is the predominance of women, with some variation, in all groups of health care occupations included in this analysis.

Although Asians are generally well represented in the health professions, the statistical evidence indicates that certain Asian subpopulations are not. These include the region's Hmong, Laotian and Cambodian populations. Relative to their presence in the general labor force, these groups are underrepresented among the region's health professionals.

- Hmong represent roughly 11% of Asians in the region's general labor force, but just 6% of Asian health care workers.
- Cambodians represent roughly 7% of Asians in the region's general labor force, but just 2% of Asian health care workers.
- Laotians represent approximately 6% of Asians in the region's general labor force, but just 0.1% of Asian health care workers.

Other key findings:

- Roughly half of all Asians and approximately 40% of all whites who work in the region's health care labor force are employed as *Healthcare Diagnosing and Treating Practitioners*. This broad group of occupations includes the highest-paying health occupations that require the highest levels of education.

- Almost half of all Latinos and African Americans who work in the region's health care labor force are employed in the broad group of *Healthcare Support Occupations*. These are typically entry-level occupations, at the bottom of the wage scale, requiring minimal educational investment.

- Asian health care workers in the Central California Region had the highest median wages in 2006, an estimated $54,000 per year.

- Latino health care workers in the Central California Region had the lowest median wages in 2006, an estimated $30,000 per year.

- Foreign-born Asians are represented in roughly equal proportions in the region's general labor force and among the region's health care workers. In contrast, foreign-born Latinos represent more than half of all Latinos in the general labor force, but just over 20% of Latino health care workers.

Recent Graduates of Health Professions Education Programs

There are several key findings from the analysis of the data describing graduates of the region's health professions education programs. First, the composition of racial and ethnic diversity observed in the region's current health professions workforce is reflected in the data describing recent graduates of the region's health professions education programs; while graduates of entry-level health education programs are generally more diverse than graduates of advanced degree programs, where admission is more competitive, there are exceptions to this characterization. These data indicate an increasingly racially and ethnically diverse group of students in programs that lead to relatively well-paying occupations with a good employment outlook. These include Radiologic Technology, Respiratory Therapy and master's level programs in Social Work and Public Health.

A second key finding is that, according to reported data, training for entry-level occupations such as Medical Assisting and Dental Assisting is concentrated in the region's private, for-profit institutions. This finding has implications for the cost of education and the roles and responsibilities of the region's community colleges and adult-education programs. A single year of education in a private, for-profit institution can cost in excess of $20,000 per year, compared with the roughly $1,200 per year it costs to attend a California community college. Strategies to develop the region's allied health care workforce should address this issue.

Finally, the data suggest that several counties in the Central California Region are lacking allied health education opportunities. In Inyo, Mono, Madera, Mariposa, Calaveras and Amador counties, there were no institutions reporting graduates of the selected allied health education programs.

A single year of education in a private, for-profit institution can cost in excess of $20,000 per year, compared with the roughly $1,200 per year it costs to attend a California community college.

In Tuolumne County, only one institution reported graduates of one of the selected allied health education programs (Columbia Community College's EMT/Paramedic program). These are sparsely-populated counties with rapidly-aging populations; these factors, combined with limited educational opportunities, may present challenges in recruiting workers to fill positions in key allied health occupations.

Racial and Ethnic Representation in Selected Allied Health Education Programs: Latino, African-American and Native American Students

As with our analysis of the region's current health professions workforce, we use representation in the Central California Region's general labor force as a benchmark to analyze racial and ethnic representation of students in the selected allied health education programs. However, in determining how well-represented a specific racial or ethnic group is within a selected educational program, it is important to keep in mind that proportional representation in the general labor force is just a benchmark. We use it as a soft measure, and also consider proportional representation of a specific group of students in a particular program in relation to other programs and across all three years of data.

Not all of the selected education programs had reliable student data that could be used to describe the racial and ethnic composition of recent graduating classes. For example, many EMT/Paramedic and Nursing Assistant training programs are delivered by proprietary entities and do not report student data. Therefore, the sample used to describe graduates of EMT/Paramedic and Nursing Assistant programs in this report may not be representative. Other programs for which we found the student data to be unreliable or unavailable were those for Home Health Aides, Clinical Laboratory Scientists and Physician Assistants. In the listings below, analysis of the racial and ethnic representativeness of these programs in not included.

Latino Students:

- Latino students are well represented in the following programs: Dental Assistant, Medical Assistant, Pharmacy Technician, Psychiatric Technician, Master's in Social Work (MSW); and to a lesser extent in Licensed Vocational Nursing, Radiologic Technology and Master's in Public Health (MPH).

- Latino students are underrepresented in the following programs: Dental Hygiene, Master of Science in Nursing (MSN), Physician Assistant, Substance Abuse/ Addiction Counseling (associate's degree), Clinical and Counseling Psychology (master's degree), and Respiratory Therapy.

African-American Students:

- African American students are well represented in the following programs: Dental Assistant, Medical Assistant, Pharmacy Technician, Licensed Vocational Nursing, Master of Science in Nursing (MSN), Psychiatric Technicians, Substance Abuse/Addiction Counseling (associate's degree), Master's in Social Work (MSW), Master's in Public Health (MPH) and Clinical and Counseling Psychology (master's degree).

- African American students are underrepresented in the following programs: Dental Hygiene, Radiologic Technology, and, to some extent, in Respiratory Therapy programs.

Native American Students:

- Native American students are well represented in the following programs: Dental Hygiene, Medical Assistant, Pharmacy Technician, Licensed Vocational Nursing, Master of Science in Nursing (MSN), Psychiatric Technician, Substance Abuse/Addiction Counseling (associate's degree), Respiratory Therapy, Master's in Social Work (MSW), and Clinical and Counseling Psychology (master's degree).

- Native American students are underrepresented in the following programs: Dental Assistant, Radiologic Technology and Master's in Public Health (MPH).

Employment Opportunity

Employment opportunity correlates strongly with the absolute size of the workforce: The larger the workforce, in general, the greater the opportunity for employment. The following four selected occupations (all among the largest in terms of workforce size) are projected to offer the greatest opportunity for employment across the region over the coming decade: Dental Assistant, Medical Assistant, Home Health Aide and Nursing Assistant/Aide. Population growth is one of the strongest drivers of employment growth and again, absolute size matters. This means that, with some exceptions, allied health employment opportunities in the region will be greatest in Fresno, Kern, San Joaquin, Stanislaus and Tulare counties.

In the less populous parts of the region — Kings, Madera, and Merced counties, the Mother Lode economic region (Amador, Calaveras, Mariposa, Tuolumne counties) and Eastern Sierra economic region (Inyo and Mono counties) — much of the projected employment opportunity is concentrated in two areas: Registered Nursing and health care support occupations such as Nursing Assistant/Aide, Home Health Aide, and

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Latino health care workers are concentrated in the segment of the health care workforce that consists of mainly low paying, entry-level occupations.

Medical Assistant. In these counties and economic regions, for most of the selected allied health occupations, the projected number of job openings is no more than two or three per year. It is important to remember that for the Mother Lode and Eastern Sierra economic regions, the employment projections data refer to the entire region, rather than individual counties. It is also important to recognize that because of the small size of these counties and economic regions in terms of population, projections data are unavailable for many of the selected occupations. Still, as noted above, local training opportunities are limited in these counties, filling even the small number of projected job openings could be a challenge.

For the selected social and mental health related allied health occupations, much of the employment opportunity is projected to be in the more populous counties: Fresno, Kern and San Joaquin. Growth in employment opportunities for Mental Health Counselors, Social Workers, and Substance Abuse/Behavioral Disorder Counselors is projected to be above average, and the number of opportunities is expected to be in the range of 10-15 openings per year. The number of opportunities for Medical/ Public Health Social Workers and Public Health Educators are generally expected to be fewer, although the data indicate that prospects will be best in Kern County.

Employment projections data for most of the selected occupations that are either diagnosing and treating practitioner professions or health care technologist/ technician professions show county-level variation in terms future opportunity. One occupation, however, for which opportunity is projected to grow rapidly across the entire region is Physician Assistant. However, this is a comparatively small workforce resulting in a small number of job openings each year.

Other occupations that are expected to offer a relatively large number of opportunities for employment (although they may not be fast-growing professions) include Respiratory Therapist and Radiologic Technologist in San Joaquin and Fresno counties; Pharmacy Technician in Kern, Fresno, Monterey and San Joaquin counties; Licensed Vocational Nurse in Fresno, Kern, San Joaquin, San Luis Obispo, Monterey and Tulare counties; Clinical Laboratory Scientist in Fresno, San Joaquin and Kern counties. Occupational projections data from the California Employment Development Department (EDD) describing the employment outlook for Psychiatric Technicians across the different counties in the region is not widely available. However, a separate employer survey recently conducted by the Central California Workforce Collaborative (CCWC) reports a high level of demand for Psychiatric Technicians in the region.[1]

1 This survey, focused on a 10-county region in the Central Valley of California, was conducted from November 2007 – April 2008 with 692 regional health care employers participating. More information is available at: http://www.careersinthevalley.com/

Summary of Major Findings

One of the key issues to emerge from this analysis of the Central California Region's population, health care workforce, and graduates of the region's selected health care education programs are the conditions faced by the Latino population. The region's Latino population is young, earns comparatively lower wages, is comparatively less well educated than other populations, and across the region more than 40% of the Latino population speaks English either "not well" or "not at all." These are all important factors to consider as part of any effort to address the region's health care needs and to develop its allied health care workforce.

Latino health care workers are concentrated in the segment of the health care workforce that consists of mainly low paying, entry-level occupations. The educational attainment profile for the region's Latino health care workforce correlates with this finding. Only an estimated 22% of Latino health care workers in the region hold at least a bachelor's degree, compared with 54% of Asian health care workers and 39% of white health care workers. The median wage of Latino health care workers is much lower than Asian and white health care workers.

To a large extent, data describing recent graduates of health professions education programs in the region corroborate these findings. Latino students are best represented in those training programs that lead to low paying, entry-level health care positions. These are typically certificate programs that can be completed in less than one year and that may lead to a certification rather than a credential. Many of these programs are offered by private, for-profit institutions; in fact, the education data indicate that 75% to 90% of reported graduates of entry-level health care training programs attended one of the region's private, for-profit institutions. This finding has implications for the cost of education and the roles and responsibilities of the region's community colleges and adult-education programs. Useful policies and programs might focus on recruiting Latino students into health care occupations that involve greater educational investment and find ways to assist current Latino health care workers to progress through established career ladders into higher paying health care occupations. Unfortunately, other than small pilot programs, little is known about the success of career ladder programs. There are no readily available sources of data describing career ladder programs, where they are located, which career paths they serve, or the extent to which they are accessed by workers. Strategies to develop the region's allied health care workforce should consider these findings.

The factors that might be considered causative with respect to the findings we present in this report on conditions faced by the Latino population in the region are complex. This Latino population is not a homogenous group but rather a dynamic population that encompasses many different languages and cultures.[2] Certain groups within the broad Latino category may be disproportionately affected by economic privation (represented by low levels of education), or tend not to work in allied

2 In a forthcoming report funded by The California Endowment, "The Well-being of Indigenous Farmworkers," nearly two dozen different languages spoken by indigenous Mexican populations are identified.

… certain Asian groups are not well-represented among the region's health care workers, including the Hmong, Laotian, and Cambodian populations.

healthcare occupations. The data used to produce this report do not include the kind of detail needed to explore these possibilities. There is extensive literature exploring the intersection of social, economic health status and race and ethnicity, but a review of this literature is beyond the scope of this report.

Some of the characteristics that describe the conditions faced by Latinos also apply to the region's African-American and Native American populations. African Americans and Native Americans in the region also earn lower wages than whites and Asians and are generally less well educated. African Americans and Native Americans are less well represented among occupations that require more advanced training and that earn higher wages. Although Asians are well represented among most health care occupations, particularly those that pay well, stakeholders need to be aware that the category of "Asian" is very broad and includes many subpopulations.[3] We found that certain Asian groups are not well represented among the region's health care workers, including the Hmong, Laotian and Cambodian populations.

Allied health occupations will offer a great deal of opportunity for employment in California's central region. The greatest number of opportunities will come in the form of entry-level occupations that are near the bottom of the wage scale. However, there are also many mid-level occupations for which the educational requirement for entry into practice is a two-year associate's degree and for which the regional employment outlook is strong. Data indicate that the region's entry-level allied health care labor force is already comparatively diverse. Strategies designed to develop a more diverse allied health care workforce must focus on attracting Latino, African American, Native American and underrepresented Asian groups to higher-level education programs. Another strategy should be to continue to recruit these students into the region's associate-degree education programs, and finally to assist entry-level incumbent workers to advance along established career ladders that lead to occupations involving greater decision-making, greater responsibility, and that earn higher wages.

3 Many (but not all) of the possible Asian subpopulations that exist are identified in the data used in this report to describe the region's population and health professions workforce.

Objective and Approach

Achieving a culturally-competent health care workforce is a major focus area for The California Endowment. Part of any strategy to achieve this goal will include addressing the large number of health care workers often referred to as the *allied health workforce*. This group is comprised of professionals who provide a range of diagnostic, technical, therapeutic, and direct patient care services, as well as support services. The field of allied health ranges from entry-level occupations requiring minimal educational investment to highly specialized occupations requiring advanced-degree training for entry into practice.

This report on the Central California Region (18 counties) is one in a series of reports focused on the allied health workforce. The California Endowment presents analysis of three principal groups in this report: the general population, the current health professions workforce, and the graduates of 22 selected allied health education programs. These occupations were selected based on several criteria, including that workers in these occupations often serve as the initial contact, and sometimes as the only contact, in the health care system for poor, underserved, or special needs communities. Many of these occupations are also projected to offer substantial job opportunity. Some are fast-growing occupations, some are occupations with such a large workforce that even though relative growth may be slow, job openings will be numerous, and others are both large and fast-growing. These occupations present job opportunities with a broad spectrum of education requirements for entry into practice, ranging from certificates requiring less than one year to complete to master's level training.

This report begins with an examination of selected demographic and economic characteristics of the current and projected population in the Central California Region, providing context for looking at the current workforce and educational pipeline. This is followed by a brief section that describes characteristics of the region's current health professions workforce. This section presents data describing broader groups of occupations in the entire region because data limitations prevent analysis of individual occupations in individual counties. The remainder of the report describes and analyzes labor market and education data for 22 selected occupations and education programs, which can all be considered representative of the allied health workforce. They include occupations in health care support, in community and social services, and programs for health care practitioners and health care technologists. Although the analysis for this report is multifaceted, a key theme highlighted throughout is the racial and ethnic composition of these basic workforce components: population, current health professions workforce, and the educational pipeline.

Table 1 displays the list of selected occupations and the most common level of educational attainment required for entry into practice.

Table 1.
Occupational Title and Common Educational Attainment

Occupation	Common Educational Attainment
Dental Assistant	Certificate (1–2 years)
Dental Hygienist	Associate's Degree
Medical Assistant	Certificate (1–2 years)
Pharmacy Technician	Certificate (1–2 yrs)
Home Health Aide	Certificate (<1 yr)
Nursing Assistant/Aide	Certificate (<1yr)
Licensed Vocational Nurse	Certificate (1–2 yrs)
Nurse Practitioner (Advanced Practice Nurse)	Master's Degree
Physician Assistant	Certificate (2 yrs)/Associate's/Master's Degree (depending on previous education and experience)
Respiratory Therapist	Associate's Degree
Radiologic Technologist	Certificate or Associate's Degree (1-2 years)
EMT/Paramedic	Certificate (1–2 yrs)
Clinical Laboratory Scientist	Post-baccalaureate Certificate
Psychiatric Technician	Certificate (1–2 yrs)/Associate's Degree
Mental Health Counselor	Master's/Doctoral Degree
Substance Abuse/Behavioral Disorder Counselor	Associate's/Bachelor's/Master's Degree
Mental Health Social Worker	Master's Degree
Medical/Public Health Social Worker	Master's Degree
Geriatric Social Worker	Bachelor's/Master's Degree
Public/Community Health Educator	Bachelor's/Master's/Doctoral Degree
Community Health Worker	Certificate/On-the-job training
Health Care Interpreter	Certificate/On-the-job training

Data Limitations

Data sources used to describe the various components of this report are generally the best publicly available data. However, each has limitations that impact the level of analysis that can be conducted. First, as noted above, because this analysis is focused on a sub-state geographic region we are not able to evaluate characteristics of individual occupations in individual counties. The number of sample observations available in the American Community Survey (ACS) is too small to produce estimates at that level of detail. As a result, occupations have been aggregated into larger groups and the geographic unit of analysis is the entire Central California Region.

Second, there are cases where only a general relationship between employment data and education program data exists. Occupational employment data describe those working in a specific occupation, while educational institutions report the number of graduates

trained to work in a field but not necessarily at a particular job. In this case, when employment and education data do not directly correspond, we report education data describing programs that are generally associated with the occupation of interest (i.e., those programs that are likely to provide useful training for that occupation). For example, data describing the employment conditions for Medical/ Public Health Social Workers have no direct analogue in the education data. We can only report the profile for graduates of general public health or social work programs. Thus, one should be cautious when interpreting and using these data.

Third, because the data describing employment projections and education program graduates only generally correspond, they cannot be combined to precisely balance the number of jobs for allied health workers (demand) and the number of workers available (supply). For example, the number of reported graduates of Medical Assistant programs in a given year may exceed the projected number of annual job openings for Medical Assistants. However, this finding does not necessarily mean that there is a surplus of potential workers. These graduates may choose to work at a related job or may move to find employment in another region.

Information on whether there is a surplus or a shortage of workers in a particular occupation is best obtained directly from employers, who know the number of vacant positions in their organizations, as well as how easy or difficult it is to fill open positions.[4] Educators may also have a sense of how easy or difficult it is for their graduates to find employment after graduation. Some educators track the types of jobs and workplace settings in which their new graduates are employed. It is important to note that labor market data is less extensive for occupations that have a self-employment component, where workers themselves or their employers are considered self-employed. Examples include mental health professionals in private practice and physicians and dentists with private practices that employ Medical Assistants or Dental Assistants. Estimates of the annual number of job openings due to growth and turnover may be biased downward because of the lack of self-employment data in employer surveys used to develop employment projections.

Fourth, for several of the selected occupations, the educational institutions reporting program graduates data represent only a sample of all the training opportunities for that occupation. In such cases, the number of reported graduates (N) in a given year is likely an underestimate of the total number of actual graduates. For certain education programs, student data are either poorly reported or not reported at all. For example, data describing graduates of Home Health Aide programs are unavailable. When this is the case, we cannot report on the demographic profile of graduates. We also remind the reader that occasionally, schools mistakenly report graduates of a program that they do not actually offer. We have made every effort to verify the existence of a program when student data were reported for it. All education programs that reported data are listed in Appendix E.

4 For example, see The 2007 *Fresno County Employment Study* produced by the Fresno County Workforce Investment Board available at: http://www.workforce-connection.com/index.cfm

These findings … may be useful in guiding workforce planning and in identifying areas, populations, and programs that could benefit from support in order to achieve the goal of a culturally competent workforce.

Using and Interpreting the Data

Although these data are subject to limitations, there are nevertheless several practical uses for this report. Descriptions of the demographic composition of the current workforce, despite being overly general, illustrate the lack of racial and ethnic diversity among health care occupations that involve higher levels of education and pay higher wages. They also suggest that certain subpopulations within the broader population categories may be underrepresented. For example, data from the American Community Survey (ACS) indicate that Cambodians, Hmong and Laotians, all Asian subpopulation groups, are broadly underrepresented among Central California's health care workforce.

The data describing education program graduates indicate how different racial and ethnic groups are potentially distributed as new entrants into the workforce. Estimates of employment and wages describe the wide variation in both workforce size and amount of earnings across allied health occupations. These estimates can be combined with demographic data describing the current workforce and education program graduates, as well as with the employment projections data, to highlight broad allied health workforce trends in the region. These findings may also be useful in guiding workforce planning and in identifying areas, populations, and programs that could benefit from support in order to achieve the goal of a culturally competent workforce.

Employment Projections

There are two principal components of employment projections: occupational growth (new jobs), driven largely by population growth and growth in those industries in which such occupations are concentrated, and attrition, the need to replace workers who leave their jobs for whatever reason (in most cases, a new job or retirement). For many occupations, job openings caused by the need to replace workers are more numerous than job openings due to occupational and industrial growth. In some cases, for occupations concentrated in declining industrial sectors, the need to replace workers is the only source of job openings.

For each selected occupation, we included the average number of job openings per year for each occupation, listed by county; this figure is an aggregate of the projected job openings due to both growth and attrition. As noted above, the projected job openings for occupations with a self-employment component may be underrepresented, including Medical Assistant and Dental Assistant.

Race and Ethnicity Categories

The racial and ethnic categories used in this report are defined for each data source and vary between sources. In general, the categories include white, African American, Asian, Native American, Native Hawaiian/Pacific Islander and Latino. The category of Latino ethnicity includes people of any race who self-identify as either Hispanic or Latino. "Other race" is a formal category used by the American Community Survey (ACS); in this report, the category functions as a way to represent groups when their numbers are too few to generate meaningful estimates. Latino and Asian are broad categories that obscure a variety of cultural and linguistic backgrounds, the available data do not allow us to disaggregate the category of Latino, but whenever possible we present detailed data that describes the region's many Asian subpopulations.

In the section describing graduates of education programs, we identify only those students for whom race and ethnicity was reported. Students whose race and ethnicity was unknown or unreported were excluded from the analysis. We also excluded the small number of students who were reported as non-U.S. citizens. The elimination of student data when race and ethnicity was not identified means that in those figures describing the racial/ethnic composition of graduates of a specific education program, the number of students being described is lower than the actual total number of graduating students because some proportion has been excluded. Thus, the proportions represented will always sum to 100% because they represent 100% of the students for whom race/ethnicity was reported. However, we do include the total number of graduates reported in these figures, whether or not race/ethnicity was identified. It appears in parentheses underneath the total number used to calculate graduates' racial/ethnic composition. For most education programs, in most years, the proportion of graduates whose race/ethnicity is unknown is roughly 10%.

The gender composition of education program graduates is fully identified in the data.

Table 2 summarizes the different racial and ethnic categories used by the different data sources.

Table 2.
Racial/Ethnic Categories by Data Source

Racial/Ethnic Categories by Data Source
American Community Survey (ACS) White, Asian, African American, Hispanic or Latino, Native American, Native Hawaiian, Other Pacific Islander, Multirace, Some other race
Integrated Postsecondary Education Data System (IPEDS)† White, Asian (includes Native Hawaiian/other Pacific Islander), African American, Native American/Alaskan, Hispanic or Latino
California Board of Registered Nursing (BRN) Annual Schools Survey White, Asian non-Filipino (includes Native Hawaiian/other Pacific Islander), Filipino, African American, Native American, Hispanic or Latino
California Department of Finance White, African American, Hispanic or Latino, Asian, Native American, Native Hawaiian/Other Pacific Islander, Multirace

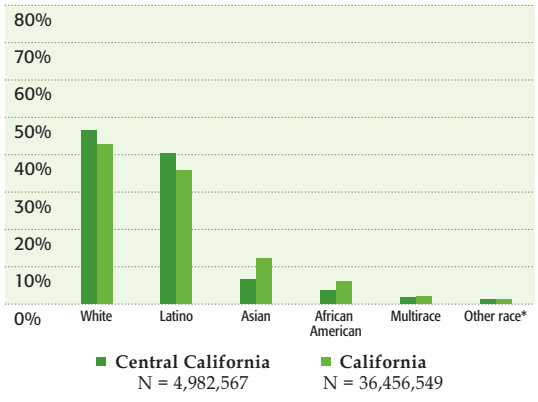
† *IPEDS includes the non-racial/ethnic reporting category of non-U.S. citizen.*

Demographic and Economic Characteristics of the Regional Population

Approximately five million people live in the 18 counties that comprise the Central California Region. Overall, the population is slightly more white and slightly more Latino than California as a whole. Other distinguishing regional features are the diverse makeup of the Asian community and the high proportion of Latinos with limited English language skills.

The following figures and tables present data describing the features of the region's current population, as well as projected changes to the region's future population. Additional information on population demographics for each of the region's 18 counties may be found in Appendix F: 2005-2030 County Population Projections by Race/Ethnicity.

Figure 1.
2006 General Population by Race/Ethnicity: Central California Region vs. California



Source: 2006 American Community Survey, PUMS
**Other race category combines American Indian, Alaska Native, Native Hawaiian, Pacific Islander, and Other race (not Latino).*

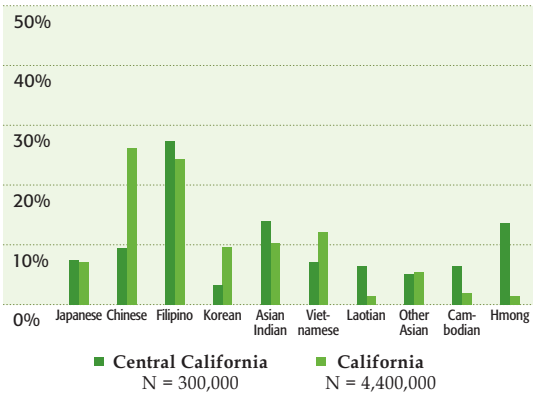
Figure 1 illustrates how the major racial and ethnic groups are distributed across the region's general population and how their proportions generally compare with the distribution across California. The Central California regional population has greater proportions of both whites and Latinos than California as a whole. By contrast, the region's Asian and African American populations are proportionally smaller. The category of "Other race" combines race groups that form such small proportions of the total population that they are difficult to depict in the same figure alongside much larger groups. In Figure 1, Other race includes American Indian/Native Alaskan (0.7%), Native Hawaiian/Pacific Islander (0.3%) and Other race, not Latino (0.2%). Collectively, the proportional representation of these groups among the general population in the Central California Region is comparable to their proportional representation in the state overall. However, the proportion of just Native Americans living in Central California is slightly higher than Native Americans in California overall (0.7% versus 0.4%).

There are differences in racial and ethnic composition across the region's 18 different counties. Roughly three-quarters of the region's population lives in the six largest counties: Fresno, Kern, San Joaquin, Stanislaus, Monterey and Tulare (in descending order by size). In each of these counties the non-white population ranges from 50%-65% of the total population. In the six smallest counties, which account for roughly 4% of the region's population (Mono, Mariposa, Inyo, Amador, Calaveras

and Tuolumne, in ascending order by size), the non-white population ranges from 15%-25% of the total population.

Figure 2 depicts the composition of the Central California Region's Asian population by selected group and compares the regional proportions with those of the state overall. Key differences include the region's comparatively large Hmong, Laotian, Cambodian and Asian Indian populations, and the region's comparatively small Chinese, Korean and Vietnamese populations.

Figure 2.
2005/2006 Asian Population by Selected Group: Central California Region vs. California



Source: Combined 2005 and 2006 American Community Survey PUMS for California
**Other Asian category combines Indonesian, Malaysian, Pakistani, Thai, Sri Lankan, Bangladeshi and all other Asian groups not specified.*

There are roughly 300,000 Asians living in the Central California Region approximately 7% of the Central California Region's general population. In the American Community Survey (ACS), the broad race category of Asian includes more than a dozen different Asian subpopulations.

Table 3 shows the considerable differences in median age across the different racial/ethnic groups.

Table 3.
2005/2006 Median Age by Race/Ethnicity: Central California Region

Race/Ethnicity	Median Age
White	42
Native American	40
Asian	36
African American	34
Native Hawaiian/Pacific Islander	32
Multiracial	30
Latino (of any race)	29

Source: Combined 2005 and 2006 American Community Survey PUMS for California

The median age of the region's white population is 13 years older than the median age of the region's Latino population. While there are differences in the median age of the different racial and ethnic populations across the different counties in the Central California Region (see Appendix B). This general pattern holds overall, the region's Latino population is younger than other groups (in certain counties the multiracial population is also quite young.) In the smallest counties, where the white population is by far the largest racial or ethnic group, its median age tends to be older than the white population in other counties of the region.[5]

The region's adult Latino and Asian populations were selected for analysis of self-reported ability to speak English because large proportions of both groups are foreign-born. Table 4 illustrates the

5 Data also indicate that there is also a wide range in the median age of the region's different Asian subpopulations. The Hmong population, with a median age of 21, is far younger than the region's Japanese population, with a median age of 49. See Appendix C: 2005/2006 Median Age by Selected Asian Group: Central California Region

differences between these two populations, in the ability to speak English.

Table 4.
2005/2006 Latino and Asian Populations Over the Age of 18 Self-Reported Ability to Speak English: Central California Region

Self-Reported Ability to Speak English	Latino (%)	Asian (%)
Very Well	42.1	45.5
Well	15.0	27.5
Not Well	20.2	17.9
Not At All	22.6	9.1

Source: 2006 American Community Survey PUMS for California

Limited English speakers represent a much greater share of the region's over-18 Latino population than the region's over-18 Asian population. Within this subpopulation, an estimated 43% of Latinos (and 27% of Asians) reported speaking English "not well" or "not at all," This has important implications for the delivery of and demands on health care services, participation in the health care workforce and academic success in allied health education programs.

Table 5 reveals several striking differences in the level of educational attainment by comparing racial and ethnic groups within the region's population and with the state as a whole.

Within the region, racial and ethnic group differences in educational attainment mirror those found at the state level. Asians represent the most educated group among all racial and ethnic groups; educational attainment for both Asians and whites is higher than other groups and the general population. Latinos represent the least educated group among all racial/ethnic groups. Educational attainment for Latinos, African Americans and Native Americans/ Native Hawaiians (which includes the Pacific Islander population) is lower than the general population. For all racial or

Table 5.
2005/2006 Educational Attainment of Population Ages 25 and Over by Race/Ethnicity: Central California Region vs. California

Group	Associate's Degree or Higher		Baccalaureate Degree or Higher		Master's Degree or Higher	
	Central CA Region (%)	California	Central CA Region (%)	California	Central CA Region (%)	California
General Population	27.0	37.3	19.0	29.6	6.3	10.6
Asian	39.0	56.0	29.7	47.7	9.2	15.5
White	36.1	46.8	26.5	37.9	9.0	14.5
Multirace	27.0	39.6	16.4	29.6	5.9	10.5
African American	27.3	33.2	16.0	22.4	4.6	7.8
Native American/ Native Hawaiian	17.0	23.5	9.0	14.0	1.4	3.5
Latino	11.1	14.6	6.3	9.6	1.9	2.8

Source: Combined 2005 and 2006 American Community Survey PUMS for California

ethnic groups, and at each degree level, the population in the Central California Region has lower levels of educational attainment than statewide averages.

Table 6 presents estimates of the median annual wages for each of the different racial and ethnic groups expressed in 2006 inflation-adjusted dollars.

Table 6.
Median Annual Wage[6] by Race/Ethnicity (2006 Inflation-Adjusted Dollars): Central California Region

Race/Ethnicity	Median Wage (2006 $)
White	$36,962
Asian	$31,990
African American	$29,994
Native Hawaiian/ Pacific Islander	$28,163
Native American	$26,291
Latino	$22,006

Source: Combined 2005 and 2006 American Community Survey PUMS for California

The Latino population is younger, less well-educated has a high percentage of limited English speakers and has the lowest median wages in the region. Half of all Latinos in the sample earned roughly $22,000 per year or less, nearly $17,000 less than the region's white population.[7]

Again, these racial and ethnic categories are very broad and obscure a variety of cultural and linguistic experiences. In all of the measures we've used to analyze the region's current population, various Latino and Asian subpopulations are disproportionately represented. For example some Asian groups may beat greater risk for linguistic isolation than other Asian subpopulations. Or certain Latino subpopulations may be disproportionately affected by the conditions of economic privation. We present these findings in as much detail as the available data allow.

Regional Population Projections

The 18 counties of the Central California Region vary widely in population characteristics. Region-wide projections mask some differences occurring between these 18 counties; detailed projections by county are in Appendix F: 2005-2030 County Population Projections by Race/Ethnicity.

The region is projected to grow by more than three million people over the next 25 years. More than one-half of that increase is expected to result from growth in the region's three largest counties: Fresno, Kern and San Joaquin. These three counties rank sixth, seventh, and eighth among all counties in the state in terms of the projected change in population size between 2005 and 2030.[8] Although growth in most of the rest of the region won't be nearly as large in terms of absolute numbers, several counties are expected to experience rapid population growth, which is expected to affect demand for health care services and health care labor. Ten of the region's 18 counties are among the top 15 projected fastest-growing counties over the period 2005-2030: Madera, San Joaquin, Merced, San Benito, Tulare, Kern, Kings, Stanislaus, Mono and Fresno.

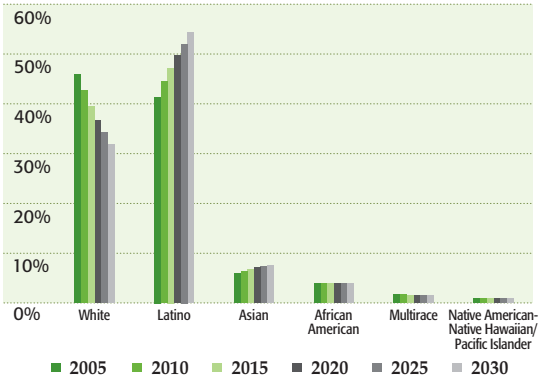
6 We imposed certain conditions on the sample in order to generate these estimates. First, the sample was limited to those who reported working at least 30 weeks during the last year, at least 20 hours per week. Then we calculated an adjusted hourly wage that controlled for differences in weekly hours worked and the number of weeks worked. Finally, the hourly wage was multiplied by 2080 hours — the annual hours worked in a full-time position — to obtain an annual FTE equivalent wage.

7 $22,000 per year was just slightly more than the 2006 federal poverty threshold for a family of four. See 2006 federal poverty guidelines at http://aspe.hhs.gov/POVERTY/06poverty.shtml

8 Analysis of CA Department of Finance, Demographic Research Unit, *Population Projections 2000-2050* (July 2007).

Figure 3 shows the projected changes in population by race/ethnicity between 2005 and 2030 in the Central California Region.

Figure 3.
2005–2030 Projected Population by Race/Ethnicity: Central California Region



Source: California Department of Finance, Demographic Research Unit
**Due to small numbers, estimates for the Native American (American Indian/Alaska Native) population and the Native Hawaiian/Pacific Islander population have been combined.*

Latino population growth is projected to account for roughly 75% of the region's expected growth of more than three million people between 2005 and 2030. The result will be a dramatic shift in the region's overall racial and ethnic composition. White and Asian populations are each projected to represent 9%-10% of this total growth. White population growth in the region contrasts with the general trend projected for the state, where the white population is expected to decline both as a proportion of California's general population and in absolute size. (The above caveats regarding the homogenous quality of the data reporting categories of Latino and Asian is once again applicable here. Specific groups within the wider Latino and Asian populations may be disproportionately represented as the source of population growth. These data alone cannot be used to determine whether this is the case.)

The other major population phenomenon expected to occur over the next two decades is the aging of the population. The number of Californians over the age of 65 is projected to increase significantly during this period; many counties in the Central California Region will experience this shift sharply. This is the fastest-growing age segment of the population in every county within the region. In total, the size of the region's population over the age of 65 is projected to grow from roughly 500,000 in 2005 to nearly 1.2 million in 2030. It is projected that by 2030, the population age 65 and over in five of the Central California Region's counties (Amador, Calaveras, Inyo, Mariposa and Tuolumne) will represent over half of the county's total population. In all 18 counties, it is projected that by 2030 the 65 and over segment of the population will be greater than the statewide average.

The tremendous growth of older segments of the population, combined with the growth of the very youngest segments of the population has workforce implications. The relationship between the economically dependent population (under 16 and over 65) and the economically productive population (ages 16-65), called a dependency ratio, has important social and economic implications. A growing dependency ratio is expected to tax systems and infrastructure, such as social and public health systems, that are financed by economic productivity. A growing dependency ratio may also change the mix and type of human resources needed to care

for the dependent population, including the need for allied health workers to provide services in acute and long-term care settings and in the home. In the Central California Region, several counties are projected to have dependency ratios approaching 1-to-1 by the year 2030. The statewide average is projected to be roughly 1-to-1.5 by 2030; half of the Central California Region's counties are projected to have ratios larger than that.

The Composition of the Current Regional Health Professions Workforce

This analysis, focusing on a sub-state geographic region, describes the regional health professions workforce (all counties aggregated together), using broad occupational groupings derived from the Standard Occupation Code (SOC) classification system. We were not able to generate estimates either at the level of individual occupations or at the geographical level of individual counties due to the small number of sample observations in the survey data. All of the occupations selected for analysis are represented by one of several broad groups.[9]

- Health Diagnosing and Treating Practitioners (SOC 29-1000)
- Health Technologists and Technicians (SOC 29-2000)
- Health Care Support Occupations (SOC 31-0000)

- Community and Social Service Counselors, Social Workers and Community/Social Service Specialists (SOC 21-1000)[10]

Occupations included in *Health Diagnosing and Treating Practitioners* are those that generally require the highest levels of education and are the highest paid in health care. Occupations selected for analysis in this report that are represented by this broad occupational group are **Registered Nurse Practitioners, Physician Assistants** and **Respiratory Therapists**.

Selected allied health occupations represented by the broad group *Health Technologists and Technicians* include **Dental Hygienists, Clinical Laboratory Scientists and Technicians, Radiologic Technologists and**

9 These broad groups also include other healthcare occupations outside the scope of this analysis. For a list of all occupations represented by these groups see Appendix A: Detailed Listing of Occupations Used in This Report by Standard Occupation Classification.

10 Sample observations of this broad occupational group were cross tabulated with industry codes to select only those counselors, social workers and social service specialists identified as working in health care-related industries.

Racial and ethnic diversity in the region's health professions workforce diminishes among occupations that require greater levels of education, entail greater responsibility, and earn higher wages.

Table 7.
2005/2006 Regional Health Professions Workforce by Occupational Group, by Gender and by Race/Ethnicity: Central California Region

	Gender		Race/Ethnicity					
	M (%)	F (%)	White (%)	Asian (%)	Latino (%)	African American (%)	Multirace (%)	Native American/ Hawaiian/ Pac. Is.* (%)
Counselors/Social Workers/Community and Social Service Specialists (SOC 21-1000)	35.8	64.2	50.6	3.3	36.3	7.7	0.9	1.2
Diagnosing and Treating Practitioners (SOC 29-1000)	29.1	79.9	64.6	19.5	11.6	2.4	1.4	0.5
Healthcare Technologists and Technicians (SOC 29-2000)	27.5	72.5	52.5	13.3	23.8	5.0	3.4	2.0
Healthcare Support Occupations (SOC 31-1000)	11.1	88.9	40.6	10.6	36.3	8.3	2.4	1.8
Region's General Labor Force[11]	**50.4**	**49.6**	**46.8**	**6.8**	**40.0**	**3.6**	**1.6**	**1.2**

**Includes Other race (not Latino).*
Source: Combined 2005 and 2006 American Community Survey PUMS for California

Technicians, **Emergency Medical Technicians and Paramedics**, **Pharmacy Technicians**, **Psychiatric Technicians** and **Licensed Vocational Nurses**. These occupations typically require an associate's degree for a worker's entry into practice. Although workers in some of these occupations earn high wages, when the broad group is considered as a whole, these workers are less well paid than diagnosing and treating practitioners.

Health Care Support Occupations are entry-level health care positions at the low end of the wage scale and typically require less than a year of formal training, or only require on-the-job training. Occupations represented by this broad group that were selected for analysis in this report include **Nursing Assistants/Aides**, **Home Health Aides**, **Dental Assistants** and **Medical Assistants**.

Counselors, Social Workers, and Community and Social Service Specialists include the following occupations selected for analysis in this report: **Substance Abuse and Behavioral Disorder Counselors**, **Mental Health Counselors**, **Medical and Public Health Social Workers**, **Mental Health and Substance Abuse Social Workers**, and **Public/Community Health Educators**.

In Table 7, the breakdown of gender and race and ethnicity for the Central California Region is shown for these four groups.

The estimates presented in Table 7 present a clear pattern across the occupation groups typically thought of as health care related (*Diagnosing and Treating Practitioners, Healthcare Technologists and Technicians, and Health Care Support Occupations*). Racial

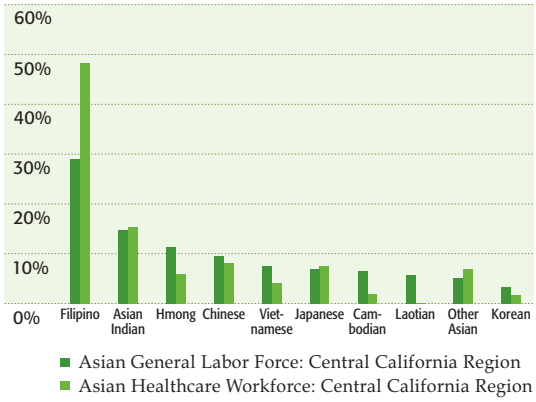
11 The region's population between the ages of 18 and 65 (inclusive) is used to proxy the actual labor force.

and ethnic diversity in the region's health professions workforce diminishes among occupations that require greater levels of education, entail greater responsibility and earn higher wages. In the broad occupational group *Counselors, Social Workers, and Community and Social Service Specialists*, populations that are often underrepresented in segments of the health care workforce (Latino, African American and Native American), are comparatively well-represented. This occupational group also stands out for its gender composition; men are also comparatively well represented. In recently conducted analysis of The California Endowment-designated San Diego region, we found that women represented a much larger share of this group of occupations in that regional labor force.

The racial and ethnic composition of these broad occupational groups changes when they are segmented by educational attainment. In that same analysis of The California Endowment-designated San Diego region, we found that racial and ethnic diversity diminishes as the level of educational attainment in the workforce increases. Unfortunately, the survey data did not contain enough sample observations to produce reliable estimates that would allow us to test this finding for the Central California Region's health care workforce.

As noted in the previous section describing the Central California Region's population, there are many subpopulations represented within the Asian category. Figure 4 compares the distribution of Asian health care workers, regardless of occupation, with the distribution of the Asian general labor force[12] in the Central California Region by selected Asian subpopulation.

Figure 4.
2005/2006 Distribution of the Asian General Labor Force vs. Asian Health Care Workforce by Selected Asian Groups: Central California Region



Source: Combined 2005 and 2006 American Community Survey PUMS for California
**Other Asian category combines Indonesian, Malaysian, Pakistani, Thai, Sri Lankan, Bangladeshi and all other Asian groups not specified.*

Nearly half of the Asian health care workforce in the Central California Region is identified as Filipino, whereas Filipinos represent roughly 30% of the region's Asian general labor force. In contrast, the region's Hmong population represents approximately 11% of the Asian labor force but just 6% of Asian health care workers. The region's Laotian and Cambodian populations represent roughly 6% and 7%, respectively, of Asians in the general labor force. However, Cambodians account for just 2% of Asian health care workers in the region and Laotians are barely represented at all (an estimated 0.1%). This has implications for workforce recruitment and training programs, as certain Asian subgroups could be targeted to increase their representation in the region's health care workforce.

12 The general labor force, as before, is the 18-65 year-old potion of the region's population.

Asian and white health care workers have substantially greater levels of educational attainment in comparison to Latino and African American health care workers.

Table 8.
2005/2006 Regional Health Professions Workforce by Race/Ethnicity and by Occupational Group: Central California Region

Race/Ethnicity	Counselors/ Social Workers/ Comm. Service Specialists (SOC 21-1000)	Diagnosing and Treating Practitioners (SOC 29-1000)	Healthcare Technologists and Technicians (SOC 29-2000)	Healthcare Support Occupations (SOC 31-0000)
White	14.5%	37.1%	19.6%	28.8%
Asian	3.7%	50.1%	20.5%	25.7%
Latino	20.3%	15.6%	18.8%	45.3%
African American	19.7%	14.9%	17.7%	47.7%

Source: Combined 2005 and 2006 American Community Survey PUMS for California

Table 8 illustrates how all health care workers[13] from the four largest racial and ethnic groups[14] are distributed across the selected health care occupational groups. For example, roughly 14.5% of white health care workers observed in the survey data worked in occupations identified as part of the broad group of *Counselors, Social Workers and Community and Social Service Specialists*. These data underscore the pattern seen in Table 7 (see above).

Nearly half of Latino and African-American health care workers are found among the broad group of *Health Care Support Occupations*, which are typically entry-level occupations that require minimal investment in formal training. In contrast, half of Asian health care workers are represented by the broad group *Diagnosing and Treating Practitioners*, which are the most highly-paid occupations requiring the greatest levels of education.

Table 9 illustrates the differences in educational attainment among health care workers in the region from the four largest racial/ethnic groups, regardless of occupation.[15]

Table 9.
2005/2006 Regional Health Professions Workforce by Race/Ethnicity and by Educational Attainment: Central California Region

Health Professionals by Race/Ethnicity	Master's Degree or Higher (%)	Bachelor's Degree or Higher (%)	Associate's Degree or Higher (%)
All Health Professionals	17.9	37.1	55.1
Asian	26.0	54.0	70.1
White	19.4	39.1	57.9
Latino	9.4	21.6	36.9
African American	5.9	18.1	34.9

Source: Combined 2005 and 2006 American Community Survey PUMS for California

These data are consistent with the pattern seen in the previous two tables, as well as the data describing educational attainment among the region's general population over the age of 25 presented in the previous section. Asian health care workers are better educated than other racial and ethnic groups; both Asian and white health care workers have substantially greater levels

13 It is possible that there are health care workers who are not identified in the survey data by one of Standard Occupational Classification (SOC) codes used in our analysis.

14 The number of observations for Native American, Native Hawaiian/Pacific Islander and Multirace health care workers was too small to generate meaningful estimates.

15 Again, we omitted estimates for Native American, Native Hawaiian/Pacific Islander and Multirace healthcare workers because of the small number of sample observations. However, healthcare professionals from these racial/ethnic groups are included in the "All Health Professionals" category (the first row of Table 9).

of educational attainment than Latino and African-American health care workers.

Table 10 shows 2006 median income data by race and ethnicity for regional health care workers, regardless of occupation, among the four largest racial and ethnic groups.

Again, these data complement the picture portrayed by the previous tables in this section. Asian health care workers earn more than do health care workers from the other racial/ethnic groups. Both Asian and white health care workers earn substantially more than Latino and African-American health care workers in the region. This is not surprising given the predominance of Asian health care workers, and to a lesser extent white health care workers, in occupations that are known to be high wage occupations. Data also show that Asian and white health care workers have higher levels of educational attainment, which typically correlates with higher wages.

The region's Asian and Latino populations both have large proportions that are foreign-born. Table 11 compares the proportion of foreign-born Asians and Latinos in the general labor force versus the health professions workforce.

The region's foreign-born Asian population is well represented in the health professions workforce. Roughly 73% of Asians in the region's general labor force and in the region's health care labor force are foreign-born. In contrast, the region's foreign-born Latino population is far less likely to work in a health care occupation. Foreign-born Latinos represent more than half of the region's Latino general labor force, but just 20% of the region's Latino health care workers.

As before, the categories of Latino and Asian may obscure variations between different subpopulations. In the measures we used to analyze the region's current health professions workforce, certain Latino or Asian subpopulations may be disproportionately represented, but the level of detail that we are able to present in our analysis is limited by the available data.

Table 10.
Median Annual Income by Race/Ethnicity for Regional Health Professions Workforce (2006 Inflation-Adjusted Dollars): Central California Region[16]

Selected Health Professionals by Race/Ethnicity	Median Wage (2006 $)
Asian	$53,851
White	$42,661
African American	$31,990
Latino	$29,994

Source: Combined 2005 and 2006 American Community Survey PUMS for California

Table 11.
2005/2006 Foreign-born Asians and Latinos in Central California Region: Health Care Workforce vs. General Labor Force

Foreign-born Proportion of Selected Population			
Asian		Latino	
General Labor Force (%)	Health Care Workforce (%)	General Labor Force (%)	Health Care Workforce (%)
72.6	72.7	52.6	21.7

Source: Combined 2005 and 2006 American Community Survey PUMS for California

73% of Asians in the region's … health care labor force are foreign-born. Foreign-born Latinos represent … 20% of the region's … health care workers.

16 We imposed certain conditions on the sample in order to generate these estimates. First, the sample was limited to those who reported working at least 30 weeks during the last year, at least 20 hours per week. Then we calculated an adjusted hourly wage that controlled for differences in weekly hours worked and the number of weeks worked. Finally, the hourly wage was multiplied by 2080 hours to obtain an annual FTE equivalent wage.

Labor Market and Education Data for Selected Allied Health Occupations

The tables and figures in this section present county-level data[17] on current employment, employment-to-population ratios, wages, projected occupational growth for the selected allied health professions, and region-level data describing the racial and ethnic composition of recent graduates of the selected allied health education programs. For some counties, labor market data are aggregated into economic regions.[18] The Mother Lode Region (ML Region) includes Amador, Calaveras, Mariposa, and Tuolumne counties; Mono and Inyo counties are part of the Eastern Sierra Region[19] (ES Region). For certain occupations, current estimates of employment and wages were not available. In those cases, we made efforts to obtain estimates from previous years; although in some cases, no estimates were available, indicated by "–" in the tables that follow.

In the figures describing the racial and ethnic composition of graduates of selected education programs, the proportional totals displayed represent graduates for whom race and ethnicity was reported. Graduates for whom race and ethnicity was not identified were excluded from these calculations. However, these figures do include both the total number of graduates who are identified by race and ethnicity and the total number of reported graduates (including those not identified by race and ethnicity). The convention we employed was to use (N) to denote "identified totals" and in parentheses underneath (N) is the "total reported." For example, in **Figure 5, 2005–2007 Racial/Ethnic Composition for Reported Graduates of Dental Assistant Programs: Central California Region**, in 2005 there were 396 total graduates reported by programs in the region, 378 of whom reported race or ethnicity.

DENTAL ASSISTANT AND DENTAL HYGIENIST

Description: Dental Assistant

Registered Dental Assistants (RDA) are licensed in California by the Committee on Dental Auxiliaries. However, Dental Assistants may also work as unlicensed professionals. By law, unlicensed Dental Assistants perform only the most basic tasks to support a dentist. Their scope of practice includes preparing patients

17 While San Benito County is part of the Central California Region, labor market data for San Benito County is aggregated into the larger San Jose-San Mateo-Sunnyvale metropolitan statistical area. Therefore, San Benito County labor market data is not included in this report. For more information see: http://www.labormarketinfo.edd.ca.gov/?PAGEID=94

18 These data come from the California Employment Development Department, Labor Market Information Division and are released to the public already aggregated into economic regions.

19 The Eastern Sierra economic region also includes Alpine County, which is not a part of the California Endowment-designated Central California or Fresno/Central State Region.

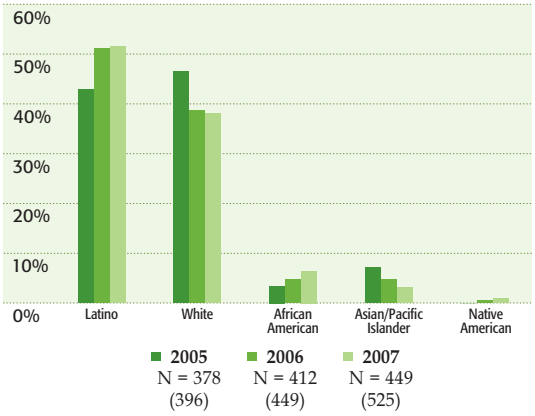
Table 12.
2006 Dental Assistant Estimated Employment, Employment per Population, 2007 Median Annual Wage and 2004-2014 Job Openings/Year by County

County	Estimated Employment	Estimated Employment per 100,000 Population	Median Annual Wage	Avg. # of Job Openings Per Year
Fresno	1000	108	$30,243	44
Kern	950	117	$25,230	49
Kings	130	85	$31,304	3
Madera	110	73	$30,825	3
Merced	160	63	$29,598	8
Monterey	550	129	$35,714	27
San Joaquin	700	103	$26,894	34
San Luis Obispo	410	153	$31,949	20
Santa Cruz	300	113	$31,637	15
Stanislaus	720	138	$28,454	34
Tulare	420	97	$26,894	16
ML Region	180	113	$32,302	10
ES Region	-	-	$33,613	-

Source: California Employment Development Department, Labor Market Information Division

for treatment, obtaining dental records, sterilizing and disinfecting instruments and equipment, preparing trays of instruments, and performing a limited number of technical procedures.

Figure 5.
2005–2007 Racial/Ethnic Composition for Reported Graduates of Dental Assistant Programs: Central California Region



Source: Integrated Postsecondary Education Data System (IPEDS)

By contrast, licensed Registered Dental Assistants (RDA) have a considerably wider scope of practice that involves performing many more technical procedures. In fact, there is a fair amount of overlap between the Registered Dental Assistant scope of practice and the Registered Dental Hygienist (RDH) scope of practice. The key difference is that for those procedures that Registered Dental Assistants and Registered Dental Hygienists share in common, state regulations require that a supervising dentist be physically present when the Dental Assistant performs them. The Registered Dental Hygienist would be allowed to perform the same procedure without a dentist being physically present.[20]

Employment, Wage and Education Data: Dental Assistant

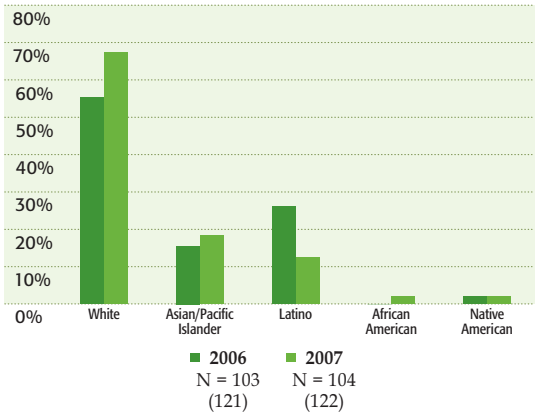
See Table 12 and Figure 5

20 A table listing allowable duties by type of dental auxiliary is available on the COMDA website at http://www.comda.ca.gov/index.html

Description: Dental Hygienist

Registered Dental Hygienists (RDH) are licensed in California by the Committee on Dental Auxiliaries. The RDH scope of practice includes removing soft and hard deposits from teeth, teaching patients how to practice good oral hygiene and providing other preventive dental care. Hygienists examine patients' teeth and gums and record the presence of diseases or abnormalities. They remove calculus, stains and plaque from teeth; perform root planning as a periodontal therapy; take and develop dental x-rays; and apply cavity-preventive agents, such as fluorides and pit and fissure sealants. With additional training, and under the direct supervision of a dentist, Registered Dental Hygienists in California can deliver local anesthesia, as well as nitrous oxide and oxygen.

Figure 6.
2006–2007 Racial/Ethnic Composition for Reported Graduates of Dental Hygienist Programs: Central California Region



Source: Integrated Postsecondary Education Data System (IPEDS)

Employment, Wage and Education Data: Dental Hygienist

See Table 13 and Figure 6

Table 13.
2006 Dental Hygienist Estimated Employment, Employment per Population, 2007 Median Annual Wage and 2004-2014 Job Openings/Year by County

County	Estimated Employment	Estimated Employment per 100,000 Population	Median Annual Wage	Avg. # of Job Openings Per Year
Fresno	370†	40†	$50,523	11
Kern	180	22	$84,115	6
Kings	–	–	–	–
Madera	50	33	$77,730	–
Merced	110	44	$91,770	0
Monterey	–	–	$107,910	4
San Joaquin	290	43	$86,008	7
San Luis Obispo	190	71	$75,774	7
Santa Cruz	290	109	$81,390	9
Stanislaus	270	52	$95,264	9
Tulare	180	42	$72,821	2
ML Region	80	50	$94,806	1
ES Region	–	–	–	–

† *2005 employment estimate or 2006 wage estimate*
Source: California Employment Development Department, Labor Market Information Division

Summary of Employment, Wage and Education Data: Dental Assistant and Dental Hygienist

There is a noticeable difference in the size of the workforce relative to the size of the population for both Dental Assistants and Dental Hygienists in various counties in the Central California Region. San Luis Obispo County has the highest per population ratio for both Dental Assistants and Dental Hygienists; this may be tied to the number of dentists per capita as well (these data are not included here). Wages for both Dental Assistants and Dental Hygienists also exhibit variation, but not in a clear pattern. Typically, wages are higher where the supply of workers is lower but these data do not reflect this dynamic. Estimated wages for both Dental Assistants and Dental Hygienists are highest in Monterey County.

Employment opportunities for Dental Assistants are projected to grow well above the average rate across the region. This growth includes job openings due to both growth and attrition, except in Kings and Merced counties, Opportunity is expected to grow most rapidly in San Joaquin County and least rapidly in Kings County. However, relative growth does not give an indication of the overall number of job openings. As with all occupations, the number of jobs correlates with population size. The greatest number of job openings for Dental Assistants over the coming decade will be in the region's two largest counties, Fresno and Kern. Employment opportunities for Dental Hygienists, in contrast with Dental Assistants, are projected to grow at average or below average rates across the region.

One notable feature of these projections is the county-level variation in the ratio of projected job openings for Dental Hygienists to projected job openings for Dental Assistants. Among counties for which data are available, this ratio is smallest in Santa Cruz County, where each projected Dental Hygienist job opening is matched by only 1.6 job openings for Dental Assistants. The ratio is largest in the Mother Lode Region, where each projected Dental Hygienist job opportunity is matched by 10 opportunities for Dental Assistants. This suggests that the employment relationship between Dentists and Dental Auxiliaries is different across the different counties in the region. However, the factors that would be expected to determine this relationship are numerous and complex, and ultimately beyond the scope of this report.

The coverage of these labor market data is less extensive for occupations that have a self-employment component, where either workers themselves or their employer is considered self-employed. In this case, dentists with private practices that employ Dental Assistants

are not well represented. This would have the effect of understating the annual number of job openings due to growth and turnover.

In terms of educational opportunity, the Committee on Dental Auxiliaries lists 15 different "approved" Registered Dental Assistant programs[21] in the region, 11 of which are located in just three counties: Fresno (four), Kern (three), Stanislaus (four). Private, for-profit institutions dominate the training of Dental Assistants in the region (roughly 85% of the reported graduates in 2007). This has implications for the overall cost of training and student indebtedness. For Dental Hygienists there are five formal programs in the region; four of the five are associate's degree programs; the University of the Pacific offers a bachelor's degree. The gender composition of both Dental Assistant and Dental Hygiene education programs is overwhelmingly female. In both cases, women represent well over 90% of the total number of graduates. The racial and ethnic composition of graduates shows real differences between the two occupations: Dental Assistant programs are much more diverse. In 2007, roughly half of region's Dental Assistant graduates were Latino, compared to just 13% of Dental Hygiene graduates. Graduates of Dental Hygiene programs are mainly white (65%-70%) and Asian (15%-20%) women.

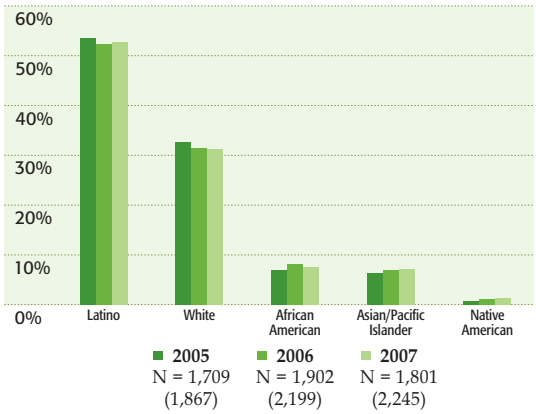
21 There may be other Dental Assistant programs among the region's Regional Occupations Programs (ROP) and public Adult Vocational Schools that are not considered "approved" by COMDA. Furthermore, Dental Assistants may simply receive on-the-job training, forgoing formal training.

MEDICAL ASSISTANT

Description: Medical Assistant

Medical Assistant is an unlicensed occupation. Medical Assistants perform a variety of administrative and clinical tasks to keep the offices of physicians, podiatrists, chiropractors and other health practitioners running smoothly. The scope of practice of Medical Assistants varies from office to office, depending on the location and size of the practice and the practitioner's specialty. In small practices, Medical Assistants are usually generalists, handling both administrative and clinical duties and reporting directly to an office manager, physician or other health practitioner. In larger practices and clinics, Medical Assistants tend to specialize in a particular area and are under the supervision of department administrators. Clinical duties vary according to state law and include taking medical histories and recording vital signs, explaining treatment procedures to patients, preparing

Figure 7.
2005–2007 Racial/Ethnic Composition for Reported Graduates of Medical Assistant Programs: Central California Region



Source: Integrated Postsecondary Education Data System (IPEDS)

patients for examination, and assisting the physician during the examination.

Employment, Wage and Education Data: Medical Assistant
See Table 14 and Figure 7

Summary of Employment, Wage and Education Data: Medical Assistant

As expected, there is considerable county-level variation in both the employment-to-population ratio and the estimated median wages for Medical Assistants across the Central California Region. Wages are highest in San Luis Obispo and Monterey counties (Monterey County also had the highest wages for Dental Assistants and Dental). The absolute number of Medical Assistant jobs in both Fresno and Kern counties is nearly twice that of any other county in the region. At the same time, employment for Medical Assistants in Kings and Madera counties is considerably more concentrated (meaning the ratio of jobs to population) in comparison to the other counties in the region. There is no clear pattern between employment levels and wages.

For much of the Central California Region, job opportunities for Medical Assistants are projected to grow at a rate well above average. The number of Medical Assistant job openings is projected to grow most rapidly in Madera County and least rapidly in the Eastern Sierra economic region; growth is expected to be below average in Merced and Kings counties and the Eastern Sierra economic region. Job opportunities are projected to be greatest in the two largest counties: Fresno and Kern, where the annual number of job

Table 14.
2006 Medical Assistant Estimated Employment, Employment per Population, 2007 Median Annual Wage and 2004-2014 Job Openings/Year by County

County	Estimated Employment	Estimated Employment per 100,000 Population	Median Annual Wage	Avg. # of Job Openings Per Year
Fresno	1500	163	$27,560	81
Kern	1590	196	$24,918	71
Kings	380†	248†	$23,712†	14
Madera	330	220	$25,501	19
Merced	320†	127†	$26,541	11
Monterey	680	160	$31,803	22
San Joaquin	710†	104†	$24,253	37
San Luis Obispo	350†	131†	$31,075	16
Santa Cruz	340	128	$29,619	17
Stanislaus	810	155	$24,752	35
Tulare	580	135	$25,168	27
ML Region	270	169	$27,997	14
ES Region	50	149	$27,456	2

† *2005 employment estimate or 2006 wage estimate*
Source: California Employment Development Department, Labor Market Information Division

openings may be twice as large compared with any other county in the region.

As with Dental Assistants, the coverage of these labor market data is less extensive for occupations that have a self-employment component. In this case, physicians with private practices that employ Medical Assistants may be underrepresented, understating the annual number of job openings.

Educational opportunities for Medical Assistants are widespread. In the database used for this analysis, we identified 29 different programs reporting graduates. We believe that this is only a sample[22] of the total number of programs in the region. There are likely Regional Occupations Programs (ROPs) and public Adult Vocational Schools that also offer Medical Assistant training but do not report student data. As with Dental Assistants, the largest Medical Assistant education programs, in terms of enrollment, are hosted by less-than-two-year, private, for-profit institutions. In 2007, two programs reported nearly one-quarter of the total number of graduates (Maric College–Stockton and Maric College–Modesto). The predominance of for-profit educational providers generally means greater student costs and potential debt that might be difficult to repay with relatively low wages. The gender composition of Medical Assistants, as with both Dental Assistants and Dental Hygienists, is primarily women, who represent over 90% of reported graduates each year. And as with Dental Assistants, the racial and ethnic composition of Medical Assistants is comparatively diverse; in 2007 over one-half of the reported graduates were Latino.

Table 15.
2006 Pharmacy Technician Estimated Employment, Employment per Population, 2007 Median Annual Wage and 2004-2014 Job Openings/Year by County

County	Estimated Employment	Estimated Employment per 100,000 Population	Median Annual Wage	Avg. # of Job Openings Per Year
Fresno	550	60	$33,509	16
Kern	410	51	$32,947	14
Kings	60†	39†	$32,573	4
Madera	120	80	$32,344	4
Merced	70†	28†	$33,051	3
Monterey	230	54	$39,686	9
San Joaquin	560	82	$34,611	22
San Luis Obispo	160	60	$35,589	5
Santa Cruz	160	60	$35,006	5
Stanislaus	360	69	$33,966	8
Tulare	260	60	$32,198	8
ML Region	100	63	$32,989	3
ES Region	–	–	$30,035	1

† 2005 employment estimate or 2006 wage estimate
Source: California Employment Development Department, Labor Market Information Division

22 Although we acknowledge that the medical assistant education data presented here are only a sample, we believe they are representative in that the reporting programs are a mix of public and private, two-year and less-than-two-year institutions.

PHARMACY TECHNICIAN

Description: Pharmacy Technician

Pharmacy Technician is a registered profession in California. As of January 2004, prior experience as a Pharmacy Clerk or even as a Pharmacy Technician ceased to be an acceptable qualification for registration in the state. Registered Pharmacy Technicians must meet educational standards defined by the California State Board of Pharmacy. The scope of work for Pharmacy Technicians encompasses routine tasks meant to help prepare prescribed medication for patients, such as counting tablets and labeling bottles. Those working in retail or mail-order pharmacies have varying responsibilities, such as receiving written prescriptions or requests for prescription refills from patients, preparing prescriptions, which may involve mixing medications, establishing and maintaining patient profiles, preparing insurance claims, and managing inventory. In hospitals, nursing homes and assisted-living facilities, pharmacy technicians have additional responsibilities, including reading patients' charts and preparing and delivering medicines to patients.

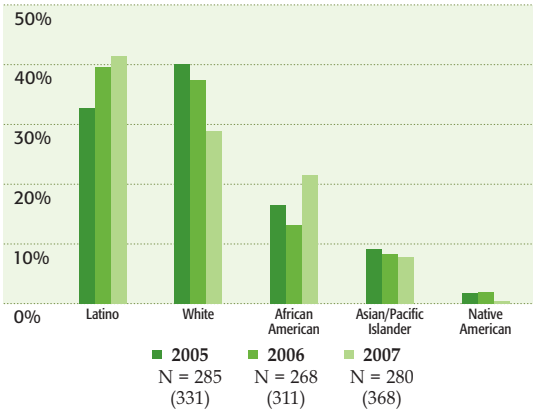
Employment, Wage and Education Data: Pharmacy Technician

See Table 15 and Figure 8

Summary of Employment, Wage and Education Data: Pharmacy Technician

Estimated levels of employment adjusted for county population size for Pharmacy Technicians in the region are fairly consistent across the region, with certain exceptions. The ratio of employment to population in Kings and Madera counties is below average, one-half to three-quarters its size in other counties. In Madera and San Joaquin counties, these ratios are roughly one-third larger than in other counties, indicating above-average employment levels. There is no discernible relationship between employment and wages across the region. Median wages in counties with a comparatively large workforce are roughly the same as in counties with a comparatively small workforce. As with Dental Assistants, Dental Hygienists and Medical Assistants, estimated wages for Pharmacy Technicians are highest in Monterey County.

Figure 8.
2005–2007 Racial/Ethnic Composition for Reported Graduates of Pharmacy Technician Programs: Central California Region



Source: Integrated Postsecondary Education Data System (IPEDS)

For most counties in the region, employment opportunity for Pharmacy Technicians is projected to grow at an average rate. The exceptions are Stanislaus, where the projected growth rate is well below average, and Kings and Monterey counties and the Eastern Sierra economic region, where the growth rate is expected to be well above average. Projected growth in job opportunities for Pharmacy Technicians is expected to grow most rapidly in the Eastern Sierra economic region and least rapidly in Stanislaus County.

The overall number of job openings will be greatest in San Joaquin County by a fairly wide margin, where, as noted above, the absolute size of the Pharmacy Technician workforce is comparatively large.

In 2007, eight Pharmacy Technician education programs reported approximately 370 graduates. All but one of these programs was offered by a private, for-profit institution (College of the Sequoias) and approximately one-third of the total number of graduates was reported by a single institution (Institute of Technology, Inc. in Fresno County). As was the case for previous occupations, there seems to be little availability in the public education system. If there is availability, students are pursuing training in the region's private institutions in much greater numbers. Roughly one-half of the total number of graduates was reported at the associate degree level. The gender composition of Pharmacy Technician programs in the region favors women, but not as heavily as in Dental Assistant, Dental Hygienist, or Medical Assistant programs. During the period 2005-2007, approximately 70% of reported graduates were women. The racial and ethnic composition of these programs is also comparatively diverse, with Latino students representing roughly 35%-40% of the total number of graduates in a given year.

HOME HEALTH AIDE AND NURSING ASSISTANT/AIDE

Description: Home Health Aide

Home Health Aides help elderly, convalescent, or disabled persons live in their own homes instead of in health care facilities. Under the direction of nursing or medical staff, these aides provide health-related services. Home Health Aides may

Table 16.
2006 Home Health Aide Estimated Employment, Employment per Population, 2007 Median Annual Wage and 2004-2014 Job Openings/Year by County

County	Estimated Employment	Estimated Employment per 100,000 Population	Median Annual Wage	Avg. # of Job Openings Per Year
Fresno	1230	133	$17,846	87
Kern	1230	152	$18,075	80
Kings	180	117	$17,555	11
Madera	–	–	–	–
Merced	240†	95†	$17,867	15
Monterey	560	132	$21,008	19
San Joaquin	1030†	151†	$17,722	72
San Luis Obispo	350	131	$21,362	27
Santa Cruz	300	113	$19,552	12
Stanislaus	540	103	$17,930	37
Tulare	530†	123†	$18,533	21
ML Region	110†	69†	$20,197	9
ES Region	–	–	–	–

† *2005 employment estimate or 2006 wage estimate*
Source: California Employment Development Department, Labor Market Information Division

check a patient's pulse rate, temperature, and respiration rate; help with simple prescribed exercises; keep rooms neat; and help patients move from bed to bathe, dress, and groom. Occasionally, they may change non-sterile dressings and may assist with medical equipment.

Employment and Wage Data: Home Health Aide

See Table 16

Description: Nursing Assistant/Aide

Nursing Assistants/Aides perform routine tasks under the supervision of nursing and medical staff, such as answering patients' call lights, serving meals and helping patients to eat. They typically also dress, bathe and provide skin care to patients; take a patient's temperature, pulse rate, respiration rate and blood pressure; and help patients get into and out of bed and walk. They also observe patients' physical, mental and emotional conditions and report any change to the nursing or medical staff. Nursing Assistants/Aides employed in nursing care facilities (nursing homes) often are the principal caregivers, having more contact with residents than do other members of the staff.

Employment and Wage Data: Nursing Assistant/Aide

See Table 17

Summary of Employment and Wage Data: Home Health Aide and Nursing Assistant/Aide

Employment projections indicate that Home Health Aide is one of the fastest-growing occupations across the region. In fact, in Kern

Table 17.
2006 Nursing Assistant/Aide Estimated Employment, Employment per Population, 2007 Median Annual Wage and 2004-2014 Job Openings/Year by County

County	Estimated Employment	Estimated Employment per 100,000 Population	Median Annual Wage	Avg. # of Job Openings Per Year
Fresno	2650	287	$23,171	75
Kern	1390	172	$20,405	29
Kings	270	176	$21,570	10
Madera	490†	327†	$23,109	13
Merced	400	158	$22,464	10
Monterey	790	186	$25,542	18
San Joaquin	2010	296	$23,712	60
San Luis Obispo	560	210	$22,485	18
Santa Cruz	570	215	$27,789	12
Stanislaus	1550	296	$23,005	39
Tulare	1510†	350†	$20,509	23
ML Region	450	282	$23,608	14
ES Region	110†	328†	$24,710	5

† *2005 employment estimate or 2006 wage estimate*
Source: California Employment Development Department, Labor Market Information Division

County (where employment of Home Health Aides is already substantial) employment projections indicate there will be roughly three Home Health Aides for every one Nursing Assistant/Aide job opening over the next decade. With the exception of Tulare County (where opportunities have the lowest projected growth), job openings for Home Health Aides are expected to grow at a rate far above average, with the most rapid growth projected for the Mother Lode economic region. This may be due to movement away from institutional care for the elderly and persons with disabilities. By comparison, job openings for Nursing Assistants/Aides are projected to grow far below average. Exceptions to this are Kings County and the Eastern Sierra economic regions where average growth is projected.

In most counties in the Central California Region, total employment of Home Health Aides is, on average, roughly one-third to one-half as large as total employment of Nursing Assistants/Aides. The exceptions are Monterey County where there are an estimated seven Home Health Aides for every 10 Nursing Assistants/Aides, and Kern County where this ratio is eight to 10. Estimates of the employment-to-population ratio underscore this relationship. Kern County has one of the largest Home Health Aide employment-to-population ratios in the region; Monterey County has one of the lowest Nursing Assistant/Aide employment-to-population ratios. For both occupations, employment levels vary widely across the region and there is no clear pattern between employment levels and wages. Median wages for Home Health Aides are roughly 75% of median wages for Nursing Assistants/Aides.

Home Health Aide and Nursing Assistant/Aide training programs are offered by a variety of providers. According to the California Department of Health Services, there may be as many as 55 Home Health Aide training programs and as many as 180 Nursing Assistant/Aide programs in the region. In recent years, no schools in the Central California Region have reported student data describing graduates of Home Health Aide programs, and only three schools have reported student data describing graduates of Nursing Assistant/Aide programs (Bakersfield College, College of the Sequoias, and Cuesta College). This sample is too small to provide analysis of the racial and ethnic profile of Home Health Aide and Nursing Assistant/Aide students.

The state of California requires that Home Health Aides undergo 120 hours of training;

some students pursue a course of training with an additional 40 hours of training that provides dual certification as a Nursing Assistant/Aide and Home Health Aide. A previously certified Nursing Assistant/Aide can become a certified Home Health Aide with an additional 40 hours of training. The state of California requires that Nursing Assistants/Aides undergo 150 hours of training in order to become certified. Requirements are specified by the state; details are available at http://www.dhs.ca.gov/lnc/download/cert/CertificationFacts.pdf.

Analysis of the broad group of health care support occupations in the region indicates that this workforce is comparatively racially and ethnically diverse, being approximately 60% non-white (of which approximately 36% is Latino). Graduates of Home Health Aide and Nursing Assistant/Aide programs might mirror that composition, but data is not currently available.

LICENSED VOCATIONAL NURSE

Description: Licensed Vocational Nurse

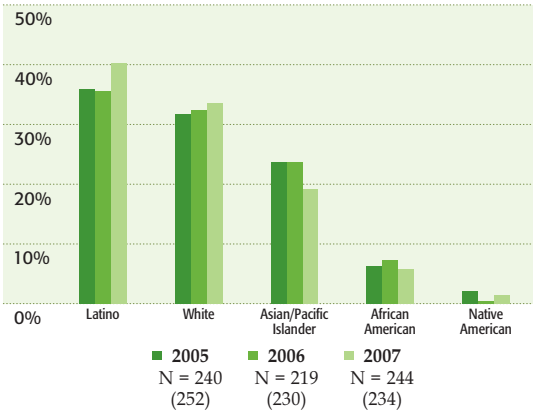
Licensed Vocational Nurses (LVNs) are licensed in the state by the California Board of Vocational Nursing and Psychiatric Technicians. LVNs care for the sick, injured, convalescent, and disabled under the direction of physicians and Registered Nurses. Most LVNs provide basic bedside care, taking vital signs such as temperature, blood pressure, pulse and respiration. They also collect samples for testing, perform routine laboratory tests, feed patients and record food and fluid intake and output. Experienced LVNs may supervise Nursing

Table 18.
2006 Licensed Vocational Nurse Estimated Employment, Employment per Population, 2007 Median Annual Wage and 2004-2014 Job Openings/Year by County

County	Estimated Employment	Estimated Employment per 100,000 Population	Median Annual Wage	Avg. # of Job Openings Per Year
Fresno	1360	147	$42,973	52
Kern	730	90	$42,016	20
Kings	130	85	$37,232	2
Madera	200†	133†	$42,037	4
Merced	180†	71†	$45,032	5
Monterey	540	127	$49,088	16
San Joaquin	900	132	$45,698	31
San Luis Obispo	260	97	$44,075	12
Santa Cruz	170	64	$49,546	5
Stanislaus	750	143	$46,155	22
Tulare	570†	132†	$40,498	12
ML Region	200	125	$42,494	3
ES Region	40†	119†	$42,286	1

† *2005 employment estimate or 2006 wage estimate*
Source: California Employment Development Department, Labor Market Information Division

Figure 9.
2005–2007 Racial/Ethnic Composition for Reported Graduates of Licensed Vocational Nursing Programs: Central California Region



Source: Integrated Postsecondary Education Data System (IPEDS)

Assistants/Aides. In California, they also may administer prescribed medicines or start intravenous fluids. Moreover, in California, as in much of the country, LVNs make up the bulk of the nursing staff in nursing homes and long-term care facilities. They are less frequently employed in inpatient acute care settings.

Employment, Wage and Education Data: Licensed Vocational Nurse
See Table 18 and Figure 9

Summary of Employment, Wage and Education Data: Licensed Vocational Nurse

Estimated levels of employment for Licensed Vocational Nurses (LVNs) vary considerably across the different counties in the Central California Region. The ratio of employment to population in Fresno County is roughly double what it is in either Santa Cruz or Merced counties. Similarly, the range of estimated wages is wide; LVN median wages are $12,000 lower per year in Kings County than in Monterey and Santa Cruz counties. With the exception of Fresno County, employment for LVNs is projected to grow at a rate well below average across the region. In terms of the absolute number of job openings, opportunity is projected to be greatest in Fresno County by a wide margin, with an estimated 50 job openings each year.

According to the California Board of Vocational Nursing and Psychiatric Technicians, there are 20 approved LVN programs in the Central California Region. The data used for this report is from 10 of the region's 20 programs; eight of these 10 are community colleges. However, the single largest program reporting graduates was the Clovis Adult Education program in Fresno County. In 2007, it reported 234 graduates, over 90% of whom were women. The racial and ethnic composition of these graduates was comparatively diverse, with non-White students representing roughly 60% of the total (33% Latino, 19% Asian/Pacific Islander, 6% African American, and 1% Native American).

NURSE PRACTITIONER

Description: Nurse Practitioner
Nurse Practitioners are advanced practice nurses who work independently or in collaboration with physicians. Other advance practice nurses include Nurse-Midwives, Clinical Nurse Specialists and Nurse Anesthetists. Nurse Practitioners provide basic preventive health care to patients, and they increasingly serve as primary and specialty care providers in medically underserved areas. In California, Nurse Practitioners can order

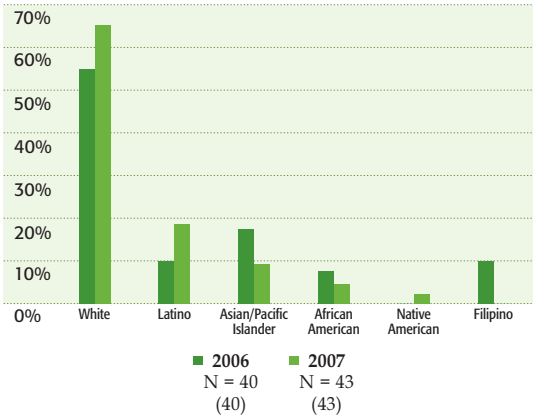
medications. The most common areas of specialty for Nurse Practitioners are family practice, adult practice, women's health, pediatrics, acute care and gerontology.

The Nurse Practitioner credential is a post-license certification regulated by the California Board of Registered Nursing (BRN). Approximately 6.6% of the current California-licensed RN workforce holds the NP certification.[23] In 2004, a new regulation was chaptered into law establishing possession of a master's degree in nursing as a requirement for certification as a Nurse Practitioner (AB 2226).[24] According to Section 2835.5 of the Nursing Practice Act,[25] "on and after January 1, 2008, an applicant for initial qualification or certification as a nurse practitioner" must "possess a master's degree in nursing, a master's degree in a clinical field related to nursing, or a graduate degree in nursing."

Education Data: Nurse Practitioner

Wage data and employment projections data specifically describing Nurse Practitioners are not available. Therefore, we cannot present any analysis of their employment conditions or outlook. Nurse Practitioner education data come from the California Board of Registered Nursing (BRN) Annual Schools Survey. The main limitation is that this data cannot describe the gender, racial or ethnic composition of students specifically in Nurse Practitioner programs. In Figure 10, we present general data describing graduates of Master of Science in Nursing (MSN) programs, Advance Practice Nursing Certification and Post-Master's Certification programs.

Figure 10.
2006–2007 Racial/Ethnic Composition for Reported Graduates of Post-License Nursing Programs: Central California Region



Source: CA Board of Registered Nursing Annual Schools Survey

Summary of Education Data: Nurse Practitioner

There are two post-license RN programs in the Central California Region: CSU Bakersfield and CSU Fresno (by far the larger of the two). Graduates are overwhelmingly women (approximately 90%), and a majority are white (on average 60% in the year 2006 and 2007). Census data from the 2006 academic year indicate that over 70% of the students enrolled in a post-license program were on track to become a Nurse Practitioner and completions data show that in 2007, 85% of post-license students graduated with a Nurse Practitioner concentration.[26]

PHYSICIAN ASSISTANT

Description: Physician Assistant

Physician Assistants (PAs) practice medicine under the supervision of physicians. They may be the principal care providers in rural or inner city clinics, where a physician is only present for one or two days each week. Many PAs work in primary care specialties such as general internal medicine,

23 J. Spetz et al., *Survey of Registered Nurses in California, 2006*. Center for California Health Workforce Studies and School of Nursing, University of California, San Francisco. June 2007. Conducted on behalf of the California Board of Registered Nursing.

24 http://www.rn.ca.gov/leg/leg2004.htm#AB2226

25 http://www.rn.ca.gov/npa/npa.htm

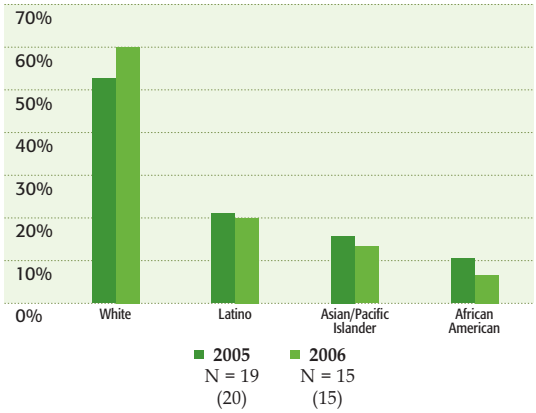
26 California Board of Registered Nursing Annual Schools Survey

pediatrics and family medicine. They are formally trained to provide diagnostic, therapeutic and preventive health care services, as delegated by a physician. Working as members of a health care team, they take medical histories, examine and treat patients, order and interpret laboratory tests and x-rays and make diagnoses. In California, PAs are licensed to prescribe medication when authority has been delegated by the supervising physician.

Employment, Wage and Education Data: Physician Assistant

See Table 19 and Figure 11

Figure 11.
2006–2007 Racial/Ethnic Composition for Reported Graduates of Physician Assistant Programs: Central California Region



Source: Integrated Postsecondary Education Data System (IPEDS)

Summary of Employment, Wage and Education Data: Physician Assistants

The Physician Assistant (PA) workforce is generally very small in size; the level of employment relative to the population varies widely across the different counties in the Central California Region. The per-population ratio for PAs in Santa Cruz

Table 19.
2006 Physician Assistant Estimated Employment, Employment per Population, 2007 Median Annual Wage and 2004-2014 Job Openings/Year by County

County	Estimated Employment	Estimated Employment per 100,000 Population	Median Annual Wage	Avg. # of Job Openings Per Year
Fresno	220	24	$88,338	6
Kern	130	16	$93,933	6
Kings	–	–	$101,421†	–
Madera	–	–	–	–
Merced	30	12	$95,493	1
Monterey	50	12	$79,643	–
San Joaquin	50	7	$72,883	3
San Luis Obispo	40	15	$84,094	1
Santa Cruz	80	30	$89,606	4
Stanislaus	30†	6†	$99,736	–
Tulare	40†	9†	$90,584	2
ML Region	–	–	$91,125	–
ES Region	–	–	–	–

† *2005 employment estimate or 2006 wage estimate*
Source: California Employment Development Department, Labor Market Information Division

County is five times what it is in Stanislaus County, which could indicate that PAs are deployed differently in the health care system within Santa Cruz County. Estimated median wages also exhibit wide variation, ranging from $73,000 annually in San Joaquin County to roughly $100,000 in both Kings and Stanislaus counties.

Future employment opportunity for PAs is projected to grow at rate far above average across the region, except in San Luis Obispo and Merced counties. Relative growth statistics, however, obscure the fact that the absolute number of projected job openings each year is expected to be very small. Across the region, the average annual number of job opportunities for PAs in any given county is expected to be no more than six.

Physician Assistant education programs are offered at both the undergraduate and graduate levels, leading to associate's degrees, bachelor's degrees and master's degrees, as well as to undergraduate and graduate certificates. Despite these differences, all programs qualify the graduate to be licensed as a Physician Assistant. Programs at the undergraduate level assume no formal degree beyond a high school diploma, whereas programs at the master's level require either an associate's degree or a bachelor's degree. All programs require completion of a specific mix of coursework in the natural and social sciences prior to admission, and all require that applicants have documented patient-centered health care work experience.

There is a single PA education program in the Central California Region at San Joaquin Valley College, which is a private, for-profit institution. It reported 20 graduates in 2005 (50% men), 15 in 2006 (33% men), and no graduates in 2007. In both years where graduates were reported, white and Asian students combined to represent 75%-80% of the total.

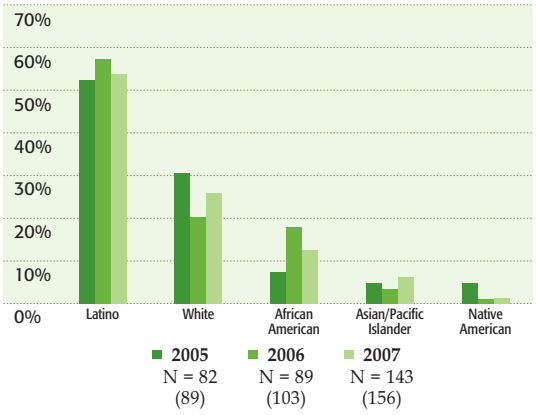
As PAs increasingly serve as primary care givers, especially in underserved areas, this could be a critical area for regional policymakers to examine for potential program growth.

RESPIRATORY THERAPIST

Description: Respiratory Therapist

Respiratory Therapists are primarily responsible for the evaluation and treatment of patients with breathing or cardiopulmonary illnesses. They work under the direction of a physician and consult with the physician during a patient's treatment. Respiratory Therapists treat a wide range of patients in diverse settings, including pediatric ICU patients,

Figure 12.
2005–2007 Racial/Ethnic Composition for Reported Graduates of Respiratory Therapist Programs: Central California Region



Source: Integrated Postsecondary Education Data System (IPEDS)

elderly patients in long-term care facilities and asthmatic patients in emergency departments. They primarily treat patients using oxygen, gas mixtures or aerosolized medications, and sometimes employ equipment such as ventilators in the delivery of treatment, to help patients who cannot breathe on their own.

Employment, Wage and Education Data: Respiratory Therapist

See Table 20 and Figure 12

Summary of Employment, Wage and Education Data: Respiratory Therapist

The availability of labor market data describing employment conditions for Respiratory Therapists in the Central California Region is limited; data are missing for nearly half of the counties and economic regions. Available data show a fairly wide range of wages and employment levels across the region. Estimated median wages range approximately $11,000, from a low of $50,000 in Tulare County to a high of $61,000 in San Joaquin County. Stanislaus County has the highest employment to population ratio in the region. This is underscored by licensing records maintained by the California Respiratory Care Board, which show that the ratio of licensed respiratory care practitioners per population in Stanislaus County is among the highest in the region.[27] Employment opportunities for Respiratory Therapists are expected to grow at a rate well above average for most counties in the region (for counties where projection data are available). The exception to this trend of rapid growth is in Kern County, where job openings are projected to grow at an average rate.

Table 20.
2006 Respiratory Therapist Estimated Employment, Employment per Population, 2007 Median Annual Wage and 2004-2014 Job Openings/Year by County

County	Estimated Employment	Estimated Employment per 100,000 Population	Median Annual Wage	Avg. # of Job Openings Per Year
Fresno	250†	27†	$60,674	15
Kern	160†	20†	$57,534	7
Kings	–	–	–	–
Madera	–	–	–	–
Merced	50†	20†	$58,448†	3
Monterey	–	–	–	–
San Joaquin	210	31	$61,360	19
San Luis Obispo	–	–	–	–
Santa Cruz	–	–	–	–
Stanislaus	250	48	$60,028	14
Tulare	120	28	$50,898	–
ML Region	50	31	$57,262	2
ES Region	–	–	–	1

† *2005 employment estimate or 2006 wage estimate*
Source: California Employment Development Department, Labor Market Information Division

27 This ratio is actually slightly higher in both Inyo and Calaveras counties according to Board data, but these two counties are not uniquely identified in the labor market data supplied by the CA Employment Development Department. Inyo is part of the Eastern Sierra Economic Region and Calaveras part of the Mother Lode Economic Region.

There are six Respiratory Therapy programs in the Central California Region, two at community colleges and the other four at private, for-profit institutions. The community college programs are roughly half the size of those at private institutions. In 2007, these programs graduated a combined 150 students, representing a 50% increase over the previous year (mainly the result of an additional program).[28] As the number of graduates increased in each of the past three years (2005-2007), the proportion of men has decreased (from roughly 45% of the total number of graduates in 2005 to 32% in 2007). The racial and ethnic composition of graduates has fluctuated in this same period. However, the number of students not identified by race or ethnicity was relatively high in 2006, which may explain fluctuations in proportional representation, particularly of Latino students. White students consistently account for more than half of Respiratory Therapy graduates.

RADIOLOGIC TECHNOLOGIST

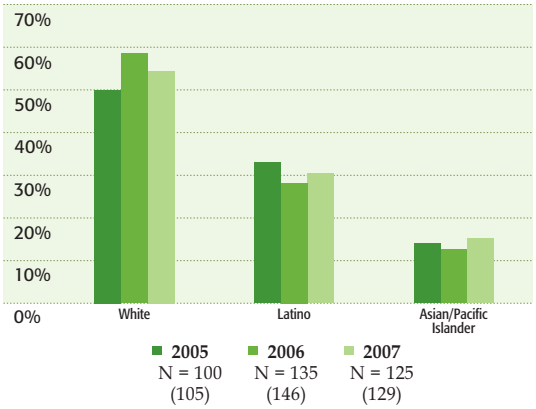
Description: Radiologic Technologist

Radiologic Technologists are responsible for taking patient x-rays and for dosing nonradioactive materials into the bloodstream for diagnostic imaging purposes. This responsibility also includes explaining to patients radiographic procedures and safety precautions, as well as following precise procedures requested by physicians. The technologist must understand preparation and positioning of patients and the appropriate use of safety shields to block excess radiation exposure. Radiologic Technologists are also responsible for the development of film, patient record keeping and adjustment and maintenance of the equipment.

Employment, Wage and Education Data: Radiologic Technologist

See Table 21 and Figure 13

Figure 13.
2005–2007 Racial/Ethnic Composition for Reported Graduates of Radiologic Technology Programs: Central California Region



Source: Integrated Postsecondary Education Data System (IPEDS)

Summary of Employment, Wage and Education Data: Radiologic Technologist

Labor market data indicate that estimated employment and wage levels for Radiologic Technologists are slightly greater than Respiratory Therapists in the region. Again, there is considerable variation in employment-to-population ratios and in median wages across the different counties. Employment relative to population is most concentrated in Fresno and Stanislaus counties. Wages vary by as much as $20,000; they are highest in Monterey County and lowest in Kings County.

28 Maric College – Modesto campus.

Table 21.
2006 Radiologic Technologist[29] Estimated Employment, Employment per Population, 2007 Median Annual Wage and 2004-2014 Job Openings/Year by County

County	Estimated Employment	Estimated Employment per 100,000 Population	Median Annual Wage	Avg. # of Job Openings Per Year
Fresno	390†	42†	$61,693	16
Kern	–	–	$51,272	7
Kings	–	–	$48,880	–
Madera	–	–	–	–
Merced	40†	16†	$56,638†	1
Monterey	110†	26†	$69,410	5
San Joaquin	210†	31†	$68,723	12
San Luis Obispo	80	30	$53,061	5
Santa Cruz	70	26	$66,477	2
Stanislaus	200	38	$61,360	7
Tulare	130	30	$62,566	3
ML Region	50	31	$57,637	2
ES Region	–	–	–	–

† 2005 employment estimate or 2006 wage estimate
Source: California Employment Development Department, Labor Market Information Division

Projected rates of growth in job opportunities for Radiologic Technologists vary across the different counties in the region. Openings are expected to grow at a rate far above average in San Luis Obispo and San Joaquin counties, and well below average in Merced County. In the rest of the region, employment opportunities are expected to grow at rates either slightly above or below average. In terms of the absolute number of jobs, however, opportunity will be greatest in Fresno and San Joaquin counties.

Radiologic Technology programs typically take 18-24 months to complete, resulting in either an associate's degree, or a certificate for those already in possession of a degree. In 2007, there were four Radiologic Technology programs in the region reporting graduates, all hosted by community colleges. The gender composition of graduates has been roughly 65% women and 35% men in recent years. The racial and ethnic composition of graduates resembles that of the region's Respiratory Therapy programs. Roughly 50%-55% of graduates are white; Latinos represent about 30%, and Asians 10%-15%. There were no African-American graduates reported between 2005 and 2007, and a single Native American graduate was reported in 2006.

EMT/PARAMEDIC[30]

Description: EMT/Paramedic

EMTs and Paramedics provide vital care to patients under emergency conditions. Typically, they are dispatched to the scene by a 911 operator and often work with police and fire department personnel. At the scene of an emergency, EMTs and Paramedics determine

29 Includes data describing Radiologic Technicians

30 The education program completions data appear to describe paramedic programs, but likely include data describing EMT programs as well.

Table 22.
2006 EMT/Paramedic Estimated Employment, Employment per Population, 2007 Median Annual Wage and 2004-2014 Job Openings/Year by County

County	Estimated Employment	Estimated Employment per 100,000 Population	25th Percentile Annual Wage	75th Percentile Annual Wage	Avg. # of Job Openings Per Year
Fresno	–	–	$21,154	$32,074	12
Kern	120†	15†	$21,091	$58,906	3
Kings	–	–	–	–	0
Madera	–	–	–	–	–
Merced	–	–	–	–	–
Monterey	–	–	$30,035	$53,123	–
San Joaquin	130†	19†	$19,698	$38,896	5
San Luis Obispo	–	–	–	–	–
Santa Cruz	–	–	–	–	5
Stanislaus	190†	36†	$21,653	$31,720	4
Tulare	100†	23†	$17,014†	$23,358†	2
ML Region	190†	119†	$24,128	$35,734	5
ES Region	50†	149†	$23,317†	$30,472†	1

† *2005 employment estimate or 2006 wage estimate*
Source: California Employment Development Department, Labor Market Information Division

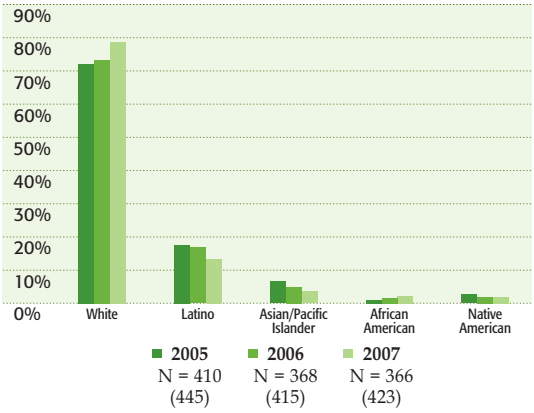
the nature and extent of the patient's condition, give appropriate emergency care and, when necessary, transport the patient.

Two wage levels are presented in the data below. This is because EMTs and Paramedics are grouped together in the data and median wages give a misleading picture of earnings. EMTs earn significantly less than paramedics and undergo less training, and the EMT and Paramedic workforce is generally distributed two-thirds EMTs and one-third Paramedics.[31] The median wage was biased downward due to the more heavily represented EMTs. We present wage estimates at the 25th percentile and at the 75th percentile,[32] believing that this better represents the earnings differences between EMTs and Paramedics.

Employment, Wage and Education Data: EMT/Paramedic

See Table 22 and Figure 14

Figure 14.
2005–2007 Racial/Ethnic Composition for Reported Graduates of EMT/Paramedic Programs: Central California Region



Source: Integrated Postsecondary Education Data System (IPEDS)

31 National Highway Traffic Safety Administration. (2007). *EMS Workforce for the 21st Century: A National Assessment.* San Francisco, CA: University of California San Francisco Center for the Health Professions and University of Washington Center for Health Workforce Studies.

32 Workers at the 25th or 75th percentile earn more than 25% or 75% of all other workers in that occupation.

Summary of Employment, Wage and Education Data: EMT/Paramedic

There are two features of the employment and wages data describing the EMT/Paramedic workforce that stand out. First, there are significantly greater employment-per-population ratios in the rural Mother Lode and Eastern Sierra regions. Relative to the population, there are anywhere from four to 10 times the number of EMTs/Paramedics in the workforce of these regions compared with other counties. This may indicate that EMTs/Paramedics function differently in their roles and responsibilities as health care workers in rural regions.

The substantially higher wage estimates for EMTs/Paramedics working in Monterey and Kern counties is the other striking feature of these data. In Monterey County, wages are higher at both the 25th and 75th percentile, while in Kern County wages are higher only at the 75th percentile.

Without exception, region-wide demand for EMTs/Paramedics is projected to grow well below average over the coming decade. In most counties, projections indicate that average annual number of job openings will be very few and in some cases none at all. At the same time, insufficient labor market data makes it difficult to draw conclusions about these differences. Data from a national EMS workforce study indicated a perceived shortage of EMTs/paramedics. However, these shortages likely vary considerably between service sector (fire or private service) and between urban and rural areas.[33]

There are many types of education training sites for EMTs and Paramedics, including ambulance services and fire departments, as well as community colleges and private schools. The data presented in Figure 14 were reported by four community colleges in the region: Cuesta College, Columbia College, College of the Sequoias and Fresno City College; this sample of student data may not be representative. All of these data describe graduates who received a one-year certificate. The gender composition of these EMT/Paramedic programs over the past three years has been roughly 70% men and 30% women. Approximately 70%-80% of graduates were white, while Latinos have represented roughly 15% of the total.

CLINICAL LABORATORY SCIENTIST

Description: Clinical Laboratory Scientist

Clinical Laboratory Scientists perform a range of complex laboratory tests and procedures that involve knowledge of chemistry, biology, microbiology, molecular biology, hematology, immunology, toxicology, histology and cytogenetics. Clinical Laboratory Scientists (also known as Medical Technologists and Clinical Laboratory Technologists) are generalists qualified to conduct necessary tests and procedures across this entire range of specialized areas. Another category, *limited Clinical Laboratory Scientist*, is for professionals who conduct tests and procedures within only a specialized area of knowledge, such as toxicology or cytogenetics.

Employment and Wage Data: Clinical Laboratory Scientist

See Table 23

33 Ibid. National Highway Traffic Safety Administration. (2007)

Table 23.
2006 Clinical Laboratory Scientist Estimated Employment, Employment per Population, 2007 Median Annual Wage and 2004-2014 Job Openings/Year by County

County	Estimated Employment	Estimated Employment per 100,000 Population	Median Annual Wage	Avg. # of Job Openings Per Year
Fresno	270	29	$66,435	16
Kern	180†	22†	$68,598	7
Kings	–	–	–	–
Madera	–	–	–	–
Merced	30†	12†	$67,704†	1
Monterey	110	26	$76,274	5
San Joaquin	220	32	$72,405	12
San Luis Obispo	80†	30†	$56,576†	4
Santa Cruz	–	–	$65,146	–
Stanislaus	80	15	$64,626	4
Tulare	170	39	$64,792	6
ML Region	30	19	$71,490	2
ES Region	–	–	$72,176	0

† 2005 employment estimate or 2006 wage estimate
Source: California Employment Development Department, Labor Market Information Division

Summary of Employment and Wage Data: Clinical Laboratory Scientist

The labor market data describing the Clinical Laboratory Scientist workforce illustrate the wide variation in employment and wage levels for this occupation across the different counties in the Central California Region. For example, adjusted for the size of the population, there are more than three times as many Clinical Laboratory Scientists in Tulare County than Merced County. Median wage estimates exhibit a similar variation, with Clinical Laboratory Scientists in Monterey County (where wages are highest) earning roughly $20,000 per year more than in San Luis Obispo County. There is no clear pattern between employment levels and wages that explains these variations.. In general, the size of the Clinical Lab Scientist workforce, adjusted for population size, is comparable to that of Respiratory Therapy; median wages are higher than Respiratory Therapists and Radiologic Technologists, but not as high as Dental Hygienists or Physician Assistants.

For most of the region, job openings for Clinical Lab Scientists are projected to grow at a rate far above average. One of the factors influencing future demand for employment in this occupation is the aging of the current workforce. Retiring workers far outpace new entrants to the workforce. On a statewide basis, an estimated 850 licensees leave the workforce every year with only 450 replacements.[34] Slower growth is projected in Merced County (below average), Kern County (average) and the Eastern Sierra Economic Region (zero projected growth).

There are no readily available data to describe students who participate in

34 From a presentation made by Robert Thomas, Section Chief of Laboratory Field Services, CA Department of Public Health at a Bay Area Lab Administrators Meeting, May 2006.

Clinical Laboratory Science training programs. The basic requirements include a baccalaureate degree in the natural sciences and completion of a 12-month post-baccalaureate training program at an approved site. For the generalist Clinical Laboratory Scientist, there are only two approved programs in the Central California Region: Children's Hospital of Central California (Madera) and Physician's Automated Laboratory (Bakersfield). These two programs train only a handful of Clinical Lab Scientists every year. There are no programs in the Central California Region that have been approved to train specialist (limited) Clinical Laboratory Scientists.

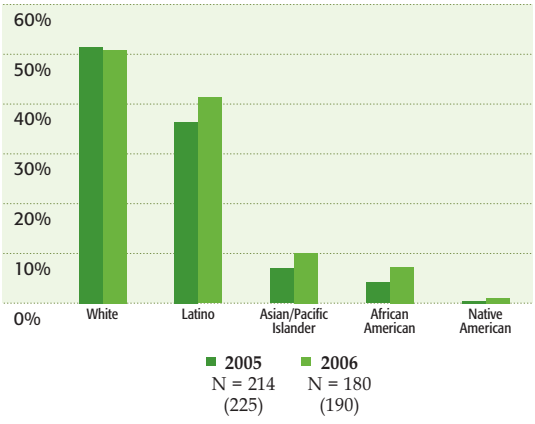
In addition to the aging of this Clinical Laboratory Scientist workforce, a severe decline in the number of training programs and candidates for licensure will be critical factors shaping both supply and demand for Clinical Laboratory Scientists in the future in the Central California Region (and across the state). Between 1975 and 2000, the number of labs in California approved to train Clinical Laboratory Scientists declined by 90%, from roughly 200 to just 20.[35] In recent years, the number has increased; there are currently 51 labs affiliated with 11 different higher education institutions and hospitals around the state.[36] However, these programs are generally much smaller than other allied health training programs. In some programs, there is a limit of two to three students per year because of the need for close supervision and intensive clinical instruction. Similarly, the number of candidates for licensure who were trained in California's Clinical Laboratory Science programs declined by approximately 90% in the last two-and-a-half decades, from roughly 860 candidates in 1980 to just 96 in 2005.[37]

PSYCHIATRIC TECHNICIAN

Description: Psychiatric Technician

Psychiatric Technicians (Psych Techs) are licensed in the state by the California Board of Vocational Nursing and Psychiatric Technicians. They care for mentally impaired or emotionally disturbed individuals, following physician instructions and hospital procedures. Psych Techs monitor the physical and emotional well-being of patients. They may also participate in rehabilitation and treatment programs, help patients with personal hygiene and administer oral medications and hypodermic injections. Workplace settings are most often psychiatric hospitals and mental health clinics. More recently, Psych Techs have been employed in large numbers in mental health correctional facilities.

Figure 15.
2005-2006 Racial/Ethnic Composition for Reported Graduates of Psychiatric Technician Programs: Central California Region



Source: Integrated Postsecondary Education Data System (IPEDS)

35 Ibid.

36 Laboratory Field Services, California Department of Public Health

37 Thomas, May 2006.

Table 24.
2006 Psychiatric Technician Estimated Employment, Employment per Population, 2007 Median Annual Wage and 2004-2014 Job Openings/Year by County

County	Estimated Employment	Estimated Employment per 100,000 Population	Median Annual Wage	Avg. # of Job Openings Per Year
Fresno	–	–	$47,091	2
Kern	–	–	$48,298	–
Kings	–	–	–	0
Madera	–	–	–	–
Merced	–	–	–	–
Monterey	–	–	$48,838†	–
San Joaquin	40†	6†	$45,198	–
San Luis Obispo	–	–	–	18
Santa Cruz	–	–	–	–
Stanislaus	–	–	–	–
Tulare	820†	190†	$45,198	10
ML Region	–	–	–	–
ES Region	–	–	–	–

† 2005 employment estimate or 2006 wage estimate
Source: California Employment Development Department, Labor Market Information Division

Employment, Wage, and Education Data: Psychiatric Technician
See Table 24 and Figure 15

Summary of Employment, Wage and Education Data: Psychiatric Technician

The availability of labor market data to describe employment conditions for Psychiatric Technicians in the Central California Region is very limited. A very high employment-per-population ratio in Tulare County is most likely due to the location of the Porterville Development Center, one of the largest[38] mental health hospitals in the state. Similarly, the comparatively large number of projected annual job openings in San Luis Obispo is most likely due to the location of Atascadero State Hospital, another large mental health hospital. Following this pattern, the Coalinga State Hospital in Fresno County could be expected to generate a similarly high employment levels, but no published data are available. As we noted in the executive summary, a separate employer survey recently conducted by the Central California Workforce Collaborative (CCWC) reports a high level of demand for Psychiatric Technicians in the region.[39] The wage data are consistent across the different counties in the region and indicate that median wages for Psych Techs are comparable to those of Licensed Vocational Nurses.

There are four Psych Tech programs in the Central California Region: San Joaquin Delta College, Porterville College, Cuesta College and West Hills College–Coalinga. Limited student data indicate small gains in the proportional representation of African American and Asian graduates. These

38 Number of beds is the reference point for hospital size.

39 Ibid. Central California Workforce Collaborative (CCWC). http://www.careersinthevalley.com/

data also indicate declining numbers of graduates, which may be due to the end of grant-funded training slots supported by statewide workforce initiatives. In terms of gender composition, women have represented roughly 70% of the total number of graduates in recent years.

Master's Level Trained Mental Health Counseling and Mental Health Social Work Professionals

The data describing employment levels, employment-to-population ratios, wages and employment projections for the selected mental health occupations refer to professionals trained at the master's degree level (or higher). The occupations themselves are grouped as either counselors or social workers and are then further classified according to the type and setting of service. Unfortunately, data are not readily available that can describe graduates of master's-level programs in social work or counseling, the type of mental health services they provide, or the settings in which they provide services. As a result, the correspondence between the mental health professions labor market and the educational program data is broad and indirect.

Given the lack of detailed data describing educational programs, the second-best option is to look at graduates of master's and doctoral level programs in clinical and counseling psychology that have an explicit objective to train mental health professionals. We also looked at Master of Social Work (MSW) programs. We have organized the labor market data describing these occupations around the available education data. Labor market data describing workers in certain occupations who have likely received training in clinical and counseling psychology are paired with education data describing graduates of clinical and counseling psychology programs at the master's level. Likewise, labor market data describing occupations of workers who probably have received training in social work are paired with education data describing graduates of master's in social work programs.

Although the labor market data presented in Tables 25 and 26 technically describe mental health workers trained at the master's degree level or higher, there is also a mental health counselor workforce consisting of paraprofessionals trained at the associate's degree level. These occupations are most likely represented by much broader occupational groups. These workers cannot be uniquely identified in the available labor market data. However, there are education data that describe graduates of Substance Abuse/Addiction Counseling Programs who have been trained at the associate's degree level. These data are presented in Figure 17.

MENTAL HEALTH COUNSELOR

Description: Mental Health Counselor

Mental Health Counselors work with

Table 25.
2006 Mental Health Counselors Estimated Employment, Employment per Population, 2007 Median Annual Wage and 2004-2014 Job Openings/Year by County

County	Estimated Employment	Estimated Employment per 100,000 Population	Median Annual Wage	Avg. # of Job Openings Per Year
Fresno	–	–	–	–
Kern	–	–	$41,184	14
Kings	–	–	–	2
Madera	30	20†	$72,613†	2
Merced	–	–	–	–
Monterey	150†	35†	$33,093	5
San Joaquin	310	46	$35,922	10
San Luis Obispo	–	–	$26,978	10
Santa Cruz	170	64	$26,894	6
Stanislaus	–	–	–	5
Tulare	–	–	–	2
ML Region	820†	19†	$75,878†	1
ES Region	–	–	$54,746†	1

† *2005 employment estimate or 2006 wage estimate*
Source: California Employment Development Department, Labor Market Information Division

individuals, families and groups to address and treat mental and emotional disorders and to promote optimum mental health. They are trained in a variety of therapeutic techniques used to address a wide range of issues including depression, addiction and substance abuse, suicidal impulses, stress management, problems with self-esteem, aging, job, career and educational concerns, issues related to mental and emotional health, and family, parenting, and marital and other relationship problems. Mental Health Counselors often work closely with other mental health specialists such as Psychiatrists, Psychologists, Clinical Social Workers, Psychiatric Nurses and School Counselors.

Employment and Wage Data: Mental Health Counselor
See Table 25

SUBSTANCE ABUSE/BEHAVIORAL DISORDER COUNSELOR

Description: Substance Abuse/ Behavioral Disorder Counselor
Substance Abuse/Behavioral Disorder Counselors assist people who suffer from problems related to alcohol, drugs, gambling and eating disorders. They counsel individuals facing addiction, helping them to identify underlying related behaviors. Counselors also conduct programs aimed at preventing addiction from occurring in the first place. Counseling sessions are designed for individuals, families and groups.

Table 26.
2006 Substance Abuse/Behavioral Disorder Counselors Estimated Employment, Employment per Population, 2007 Median Annual Wage and 2004-2014 Job Openings/Year by County

County	Estimated Employment	Estimated Employment per 100,000 Population	Median Annual Wage	Avg. # of Job Openings Per Year
Fresno	210	23	$30,451	9
Kern	170	21	$44,429	12
Kings	–	–	–	–
Madera	–	–	–	–
Merced	50†	20†	$29,910†	3
Monterey	–	–	$32,427	3
San Joaquin	–	–	–	–
San Luis Obispo	–	–	$26,957	3
Santa Cruz	–	–	–	–
Stanislaus	70	13	$35,298	–
Tulare	190†	44†	$29,349	7
ML Region	–	–	$32,406†	–
ES Region	–	–	–	0

† *2005 employment estimate or 2006 wage estimate*
Source: California Employment Development Department, Labor Market Information Division

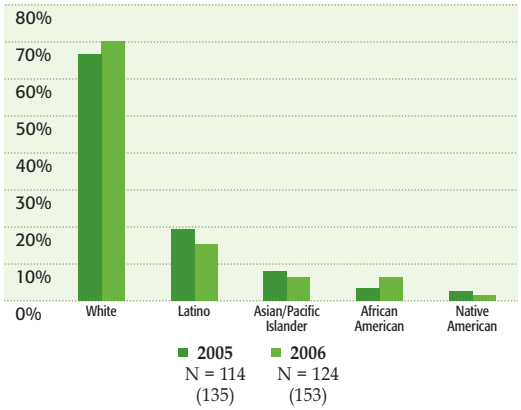
Employment and Wage Data: Substance Abuse/Behavioral Disorder Counselor

See Table 26

Education Data: Master's and Doctoral-Level Programs in Psychology; Associate Degree Programs in Substance Abuse/Addiction Counseling

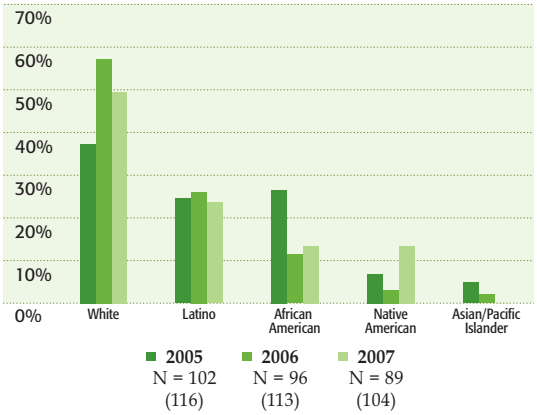
See Figures 16 and 17

Figure 16.
2005–2006 Racial/Ethnic Composition for Reported Graduates of Master's and Doctoral-Level Programs in Clinical or Counseling Psychology: Central California Region



Source: Integrated Postsecondary Education Data System (IPEDS)

Figure 17.
2005–2007 Racial/Ethnic Composition of Graduates of Substance Abuse/Addiction Counseling Programs at the Associate's-Degree Level: Central California Region

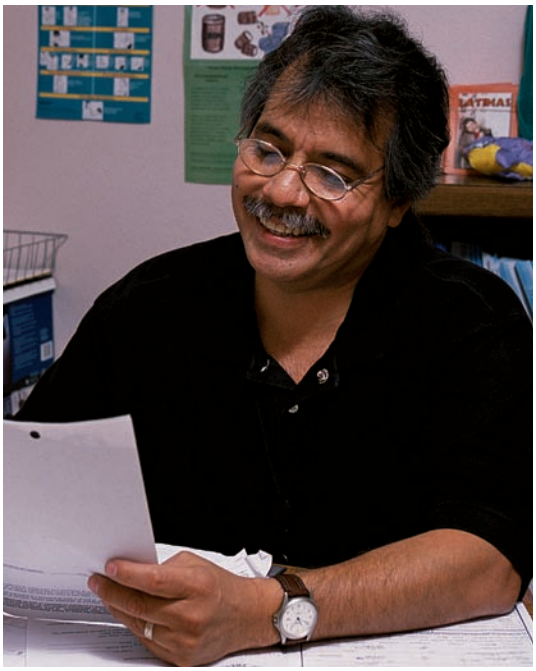


Source: Integrated Postsecondary Education Data System (IPEDS)

Summary of Employment, Wage and Education Data: Mental Health Counseling Professionals

The labor market data describing mental health counseling professionals is limited. Of note is the very wide range in estimated median wage for workers identified as Mental Health Counselors: it is more than $70,000 annually in Madera County and the Mother Lode Region, but only $27,000 annually in Santa Cruz and San Luis Obispo counties. The very high employment-per-population ratio in Santa Cruz County could indicate a very large supply of workers, which would drive down wages, although this seems an inadequate explanation. A more likely explanation for the dramatic county-level difference in estimated earnings is the result of data that are not comparable, meaning that workers identified as Mental Health Counselors function in different roles, in different settings, with different responsibilities. Estimated wages for Substance Abuse/Behavioral Disorder Counselors at the county level are more consistent across the region, with wages highest in Kern County. Levels of employment adjusted for population size indicate that Substance Abuse/Behavioral Disorder Counselors are represented in much greater number in Tulare County.

Growth in employment opportunities for mental health counseling professionals is expected to vary across the region. For Substance Abuse/Behavioral Disorder Counselors, opportunities are expected to grow rapidly in San Luis Obispo, Kern and Merced counties, while average growth is projected for Tulare, Monterey and Fresno counties (projections data for the Eastern



Sierra Region indicate zero job growth). For Mental Health Counselors, job opportunities are projected to grow rapidly in San Luis Obispo, Kings and Madera counties, as well as in the Eastern Sierra economic region (though the current workforce size is so small that even a small change would be significant). Average growth is projected for Kern, Stanislaus, Monterey, Santa Cruz, San Joaquin and Tulare counties; below-average growth is projected for the Mother Lode Region. However, since the mental health counseling professions are a comparatively small workforce, the actual number of job opportunities each year, in each county, is expected to be small.

The caveat with respect to the limited coverage of these labor market data applies here. As noted, the data are less extensive for occupations that have a self-employment component. In this case, the annual number of job openings due to growth and turnover

for Mental Health Counselors and Substances Abuse/Behavioral Disorder Counselors may be understated for those, primarily at the graduate level, who may be self-employed.

Five schools in the Central California Region reported graduates of master's (four) and doctoral-level (one) programs in psychology that train mental health professionals. Collectively they produce 130-150 new graduates each year. However, for certain programs, such as Cal State Fresno and Cal State Stanislaus, there are multiple "tracks" that lead to different professional opportunities. Cal State Fresno offers two MA degree options: One prepares graduates for doctoral programs, while the MA in Applied Behavioral Analysis trains mental health practitioners. Additionally, Cal State Fresno offers an MS in Counseling, with options in Marriage and Family Therapy and School Counseling and Student Services. The available data do not indicate how graduates are distributed across the different programs. The gender composition of these programs heavily favors women, who represent roughly 85% of the total number of graduates each year. Racial and ethnic composition heavily favors white students, who accounted for approximately 70% of graduates in 2005 and 2006.[40]

In addition to master's and doctoral level programs in clinical and counseling psychology there are six programs that train mental health paraprofessionals, offering degrees at the associate and bachelor levels. All but one of these programs are at the community college level; the single bachelor's program is located at Bethany College (private, not-for-profit). Collectively these programs graduate between 100 and 115 students each year; the program at Fresno City College is by far the largest. The gender composition of these programs is comparatively balanced, with men representing roughly 40% of the total number of graduates each year. Racial and ethnic composition of graduates has fluctuated year to year. White students represented a majority of graduates in both 2006 and 2007. Native American students represented roughly 13% of the total in 2007, which is by far the greatest proportional representation of Native Americans among any of the student bodies of the selected health professions in this report.

MENTAL HEALTH/SUBSTANCE ABUSE SOCIAL WORKER

Description: Mental Health/ Substance Abuse Social Worker

Mental Health/Substance Abuse Social Workers are a subset of the general social work professions. These professionals focus on assessing and treating individuals with mental illness or substance abuse problems, including abuse of alcohol, tobacco and other drugs. Such services include individual and group therapy, outreach, crisis intervention, social rehabilitation and training patients in skills of everyday living. These workers also may help plan for supportive services to ease patients' return to the community. Mental Health/Substance Abuse Social Workers are likely to work in hospitals, substance abuse treatment centers, individual and family services agencies or local government. These social workers may also be known as Clinical Social Workers.

40 We did not include data for 2007 due to the very high proportion of graduates whose race and ethnicity was not identified.

Table 27.
Mental Health/Substance Abuse Social Worker Estimated Employment, Employment per Population, 2007 Median Annual Wage and 2004-2014 Job Openings/Year by County

County	Estimated Employment	Estimated Employment per 100,000 Population	Median Annual Wage	Avg. # of Job Openings Per Year
Fresno	220	24	$49,837	10
Kern	230†	28†	–	9
Kings	–	–	$59,821†	–
Madera	–	–	–	2
Merced	–	–	–	–
Monterey	80†	19†	$42,494	2
San Joaquin	400†	59†	$41,246	18
San Luis Obispo	–	–	$77,418†	4
Santa Cruz	210	79	$39,458	6
Stanislaus	110†	21†	$34,216	2
Tulare	370	86	$34,549	7
ML Region	40	25	$30,118	–
ES Region	30	89	$35,984	0

† *2005 employment estimate or 2006 wage estimate*
Source: California Employment Development Department, Labor Market Information Division

Employment and Wage Data: Mental Health/Substance Abuse Social Worker
See Table 27

MEDICAL/PUBLIC HEALTH SOCIAL WORKER

Description: Medical/Public Health Social Worker
Medical/Public Health Social Workers are typically trained at the master's level and work to provide individuals, families, or vulnerable populations with the psychosocial support needed to cope with chronic, acute, or terminal illnesses such as Alzheimer's disease, cancer and AIDS. They also advise family caregivers, counsel patients, and help plan for patients' needs after discharge by arranging for at-home services such as Meals on Wheels and oxygen equipment. They are involved with some work on interdisciplinary teams that evaluate certain kinds of patients, such as geriatric or organ transplant patients. Medical/Public Health Social Workers may work for hospitals, nursing and personal care facilities, individual and family services agencies or local governments. This unique group of workers may be trained in either social work or public health.

Employment and Wage Data: Medical/Public Health Social Worker
See Table 28

GERIATRIC SOCIAL WORKER

One of the segments of the workforce that will play a critical role during the coming decade will be social workers specializing in the field of geriatrics and aging. Unfortunately, data describing

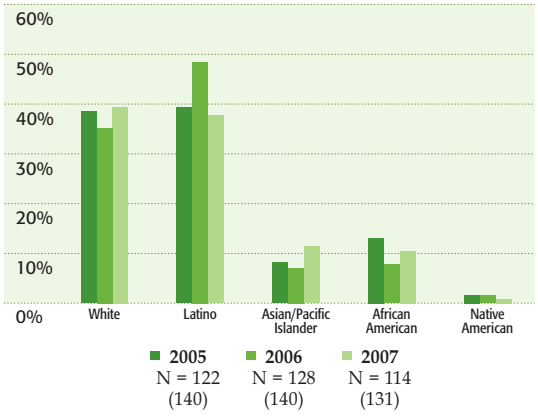
Table 28.
2006 Medical/Public Health Social Worker Estimated Employment, Employment per Population, 2007 Median Annual Wage and 2004-2014 Job Openings/Year by County

County	Estimated Employment	Estimated Employment per 100,000 Population	Median Annual Wage	Avg. # of Job Openings Per Year
Fresno	170	18	$30,846†	8
Kern	50	6	$54,163	2
Kings	–	–	$67,746	–
Madera	–	–	–	–
Merced	50†	20†	$53,602	2
Monterey	120	28	$64,002	2
San Joaquin	90†	13†	$58,198	5
San Luis Obispo	100†	37†	$56,243	4
Santa Cruz	–	–	–	–
Stanislaus	130†	25†	$61,776	4
Tulare	80†	19†	$50,835	2
ML Region	30†	19†	$46,030†	2
ES Region	–	–	–	0

† *2005 employment estimate or 2006 wage estimate*
Source: California Employment Development Department, Labor Market Information Division

these professionals in California is very limited. On the labor market side, there is no good way to distinguish these social workers from others. We were only able to find one report, which is national in scope[41] and reports that approximately 9% of licensed social workers practice in the area of geriatrics or aging. Education data describing the racial and ethnic composition of Master of Social Work (MSW) graduates are presented below in Figure 18.

Figure 18.
2005–2007 Racial/Ethnic Composition for Reported Graduates of Master of Social Work Programs: Central California Region



Source: Integrated Postsecondary Education Data System (IPEDS)

Education Data: Master of Social Work
See Figure 18

Summary of Employment, Wage and Education Data: Master's Level Mental Health Social Work Professionals

The labor market data describing mental health social workers reveal some notable differences between Mental Health/Substance Abuse Social Workers and Medical/Public Health Social Workers. With certain exceptions, Medical/Public

41 *Licensed Social Workers in the U.S., 2004.* Center for Health Workforce Studies, School of Public Health, University of Albany.

Health Social Workers earn on average 25% more than Mental Health/Substance Abuse Social Workers in the Central California Region. The size of the Medical/Public Health Social Work workforce is typically much smaller than that of Mental Health/Substance Abuse Social Workers.

For each workforce, the labor market data reveal one county that stands apart for having either very high or very low wages. Mental Health/Substance Abuse Social Workers in San Luis Obispo County earn an estimated $18,000 more per year than the next highest-paid county workforce (Kings County); Medical/Public Health Social Workers in Fresno County earn an estimated $15,000 less per year than the next lowest-paid county workforce in the region (the Mother Lode Region). Employment-to-population ratios do not indicate that the supply of these professionals in either county is unusually high or low, which could help explain such differences in wages. This suggests that these differences in earnings are the result of data that are not comparable, meaning they identify workers who function in different roles with different responsibilities and in different settings.

Using what data are available, employment projections indicate average or below average employment growth for mental health social work professionals. Exceptions to this include Medical/Public Health Social Workers in San Joaquin County and the Mother Lode economic region, where job openings are expected to grow rapidly (although it is important to remember that only a handful of job opportunities each year translate into significant growth). In addition, no job growth is projected for Medical/Public Health Social Workers or Mental Health/Substance Abuse Social Workers in the Eastern Sierra economic region.

There are three Master of Social Work (MSW) programs in the Central California Region. All are offered by Cal State Universities: Fresno, Stanislaus and Bakersfield. Collectively these programs produce 130 to 140 graduates each year. Women represent approximately 85% of the total number of graduates each year. The racial and ethnic composition of these programs is balanced between white and Latino students, who each represent roughly 40% of the total. Using proportional representation in the population as a benchmark, African-Americans students are also well represented in the region's MSW programs, accounting for 10%-13% of the total number of graduates each year.

Although quantitative information describing the state of geriatric social work education is largely unavailable, we found information describing an effort by the Council on Social Work Education to promote expertise in geriatrics and aging in social work at both the baccalaureate and the master's level. The Geriatric Social Work Initiative[42] is a multifaceted program meant to prepare an aging-savvy social work workforce. Although the Initiative's mission includes educational preparation at the bachelor's level, it appears that to date most of the programmatic work has been aimed at the master's level and higher.

42 More information on this program can be found at http://www.gswi.org/

There are several education programs in the Central California Region offering coursework focused on aging, geriatrics and gerontology. San Joaquin Delta College has reported between five and 10 graduates per year from its human services programs offering a gerontology specialist certificate. The Department of Health Science at Cal State Fresno offers an interdisciplinary minor in gerontology and a gerontology specialist certificate for students in its bachelor's of health science program. The Department of Sociology at Cal State Stanislaus offers a minor in gerontology for students in the bachelor's in social work program and a gerontology specialist certificate for students in the MSW program. There may be other programs, particularly human services programs in the region's community colleges that offer coursework or a concentration in geriatrics and gerontology, but quantitative information describing these programs and the students enrolled in them is largely unavailable.

Public and Community Health Professionals

In the section describing mental health professionals, we noted the difficulty in matching labor market data with education program data. This same difficulty pertains to the public/community health occupations targeted for analysis. Again, this means that we are only able to very broadly describe labor market conditions and educational training programs for the selected public/community health occupations. The selected occupations include Public/Community Health Educators and Medical/Public Health Social Workers. Data describing labor market conditions for Medical/Public Health Social Workers was presented previously. Data describing labor market conditions for Public/Community Health Educators is presented below.

Public/Community Health Educators are most likely trained in formal public health programs at the bachelor's, master's and doctoral levels. It is not precisely clear whether Medical/Public Health Social Workers are trained in Master of Public Health (MPH) programs or Master of Social Work (MSW) programs, and they may be trained in both types of programs. Education data describing MSW programs was presented previously. Education data describing formal programs in public health are presented below. The data describing formal programs in public health mainly represent MPH programs; bachelor's programs and doctoral degree programs account only for 7%-8% of the total number of graduates in a given year. The education data are limited by being overly broad in representing the variety of public/community health occupations. They do not include detail that would help indicate the type of public/community health services that graduates would be likely to provide or the setting in which they would provide such services.

Table 29.
2006 Public/Community Health Educator Estimated Employment, Employment per Population, 2007 Median Annual Wage and 2004-2014 Job Openings/Year by County

County	Estimated Employment	Estimated Employment per 100,000 Population	Median Annual Wage	Avg. # of Job Openings Per Year
Fresno	150	16	$36,878	7
Kern	110	14	$30,971	2
Kings	90	59	$29,931	3
Madera	40	27	$36,130	3
Merced	50†	20†	$37,066	2
Monterey	110†	26†	$37,586	3
San Joaquin	60	9	$31,845	2
San Luis Obispo	30	11	$28,142	–
Santa Cruz	110†	41†	$42,494	3
Stanislaus	–	–	$22,776	4
Tulare	–	–	–	–
ML Region	30†	19†	$29,598	0
ES Region	–	–	$43,826†	1

† *2005 employment estimate or 2006 wage estimate*
Source: California Employment Development Department, Labor Market Information Division

PUBLIC/COMMUNITY HEALTH EDUCATOR

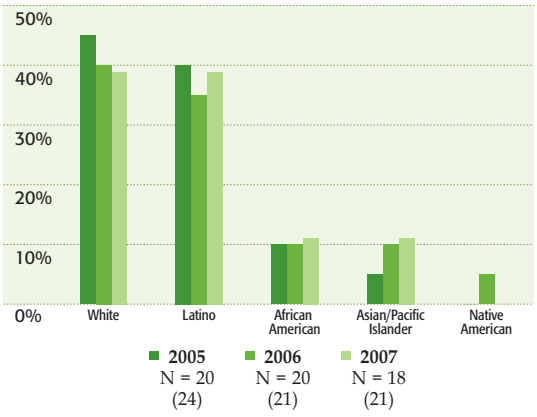
Description: Public/Community Health Educator

These are bachelor's and master's level trained professionals who work to promote, maintain, and improve individual and community health by assisting individuals and communities to adopt healthy behaviors. They collect and analyze data to identify community needs prior to planning, implementing, monitoring, and evaluating programs designed to encourage healthy lifestyles, policies and environments. They may also serve as a resource to assist individuals, other professionals and the community. In addition, they may administer fiscal resources for health education programs.

Employment, Wage and Education Data: Public/Community Health Educator

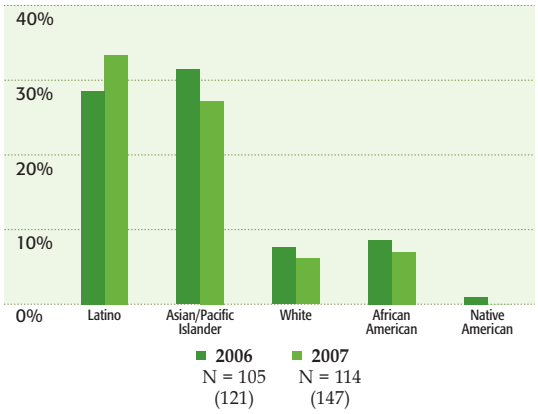
See Table 29 and Figures 19 and 20

Figure 19.
2005–2007 Racial/Ethnic Composition for Reported Graduates of Master of Public Health Programs: Central California Region



Source: Integrated Postsecondary Education Data System (IPEDS)

Figure 20.
2006–2007 Racial/Ethnic Composition for Reported Graduates of Public Health Programs at the Bachelor's Level (BS Health Science): Central California Region



Source: Integrated Postsecondary Education Data System (IPEDS)

Summary of Employment, Wage and Education Data: Public/ Community Health Educator

Labor market data describing the Public/ Community Health Educator workforce reveal variation in employment levels adjusted for population size and earnings. For example, the employment-per-population ratio for this workforce in Kings County is more than six times as large as it is in San Joaquin County. The median annual wage ranges from a low of $23,000 in Stanislaus County to a high of $43,000 in the Eastern Sierra economic region. There is no pattern that identifies the relationship between employment levels and wages. As a benchmark, we compared earnings of Public/Community Health Educators with Medical/Public Health Social Workers in the Central California Region. On average, Public/Community Health Educators earn roughly 60% what Medical/Public Health Social Workers earn. Since employment levels adjusted for population size do not reveal any striking differences between these two workforces that could help explain the earnings differential, it may be that the Public/Community Health Educators are less highly trained than Medical/Public Health Social Workers.

Job opportunities for this workforce are projected to grow at a rate well below average inmost counties in the region. Exceptions to this include Fresno and Madera counties, where above-average growth is projected, and Merced and San Joaquin counties, where average job growth is projected. In all counties, employment projections data indicate that growth of this occupation is expected to lead to no more than a handful of job openings each year.

There is a single formal public health program in the Central California Region, at Cal State Fresno, offering both bachelor's and master's degrees. The master's program produces 20-25 graduates per year. The bachelor's program has been growing in size, from 93 graduates in 2005 to nearly 150 graduates in 2007. If Cal State Fresno's bachelor's program is a major link in the region's public/community health education workforce, this could help explain the earnings differential between Public/ Community Health Educators and Medical/ Public Health Social Workers noted above.

The proportion of men in master's level public health program has been declining in recent years, from over one-half the graduates in 2005 to just 30% in 2007. At the bachelor's level, the gender balance has remained consistent, with women representing roughly 70%-75% of graduates. There are differences in the

racial and ethnic composition of graduates at the different degree levels. White and Latino students are represented in roughly equal proportions at the master's level, and collectively account for about 80% of the total number of graduates. At the bachelor's level, the increasing total number of graduates has been driven by growing numbers of Asian students, while Latinos remain the largest single racial or ethnic group. In 2006 and 2007, Asian and Latino students collectively represented roughly 60% of graduates. African-American students consistently account for 8% of the total; the number of white students in the bachelor's-level program has been declining. At the bachelor's and master's levels, there has never been more than a single Native American graduate reported.

COMMUNITY HEALTH WORKER AND HEALTH CARE INTERPRETER

Community Health Workers (CHWs) are not identified by available labor market data.[43] A recent national study[44] of Community Health Workers, which used data from the 2000 Census, estimated that there were between 5,000 and 7,000 paid CHWs (and another 3,000 volunteer CHWs) in California. The accuracy of these estimates has not been established. There are no consistent data describing wages for CHWs across California, but some local departments of public health employ a formal classification for Community Health Workers. We found such classifications in both San Joaquin and Merced counties. San Joaquin County has its own CHW training program, which serves as the first step in a career ladder within the county's department of public health. The wage range in San Joaquin County for

CHW trainees is $27,500-$33,400 annually; established CHWs it is $30,400-$37,000. In Merced County, there was a single job class for CHWs; the wage range is $31,000-$38,000. Data describing the demographic profile of CHWs in California are not available. Nationally, the study cited above found that women represented roughly 80% of the CHW workforce, and that its racial and ethnic composition was comparatively diverse: white not-Hispanic (39%), Latino (35%), African American (16%), Native American (5%), and Asian/Pacific Islander (5%).

Community Health Worker is an emerging occupation, and its job tasks and responsibilities vary depending on the workplace setting. Community Health Workers typically function as part of a public health strategy to increase health care access for underserved communities, including limited-English speakers, new immigrant populations and low-income populations. CHW responsibilities may include educating

43 The Office of Management and Budget (OMB) is considering creating a new Standard Occupation Classification (SOC) code for Community Health Worker, which would provide standardized and regular data collection on this workforce.

44 U.S. Department of Health and Human Services, Health Resources and Services Administration, Bureau of Health Professions, *Community Health Worker National Workforce Study*, March 2007.

clients about available community resources, disseminating information about health and lifestyle behaviors, advocating for community health needs, providing direct, basic health care procedures (first aid, blood pressure) and providing feedback to health care systems to improve service accessibility.

Requirements listed for employment as a Community Health Outreach Worker trainee with San Joaquin County include a HIV pre- and post-counseling certificate

issued by the state of California and fluency in a non-English language widely used by the residents of San Joaquin County. For employment as a CHW beyond the trainee level, additional requirements include obtaining Certified Phlebotomy Technician I certificate within six months of employment and completion of a county-approved Health Care Interpreter course.

CHW education and training are often conducted on the job, as illustrated by the CHW trainee job class within the San Joaquin County Health Care Services department. There is an emerging framework to formally train Community Health Workers in California's higher education institutions, but currently there are very few programs that actually offer a CHW degree or certificate. Community Health Works, based in the San Francisco Bay Area, recently received a federal grant to establish a national model for an undergraduate program in community health. It plans to develop a curriculum that will lead to a bachelor's degree in community health, which can then be used to establish undergraduate programs at college campuses across California and the rest of the nation.

Although we were not able to identify any programs in the Central California Region's many postsecondary education institutions that offer formal training, Community Health Workers may have received a general education, such as a degree in Human Services. According to the description of the Human Services degree at Hartnell Community College, the program's "curricular content encompasses various paraprofessional fields [which] include community health worker." There is also an undergraduate degree in Health Science at CSU Fresno, which offers a concentration in Community Health. Health Care Interpreters are not identified by the available labor market data. A 2003 study of this workforce in California cited a claim by the California Healthcare Interpreters Association (CHIA) that there were probably fewer than 500 professional Health Care

Interpreters working in the state at that time, and only a fraction of that workforce had been formally trained and was working full-time as an interpreter.[45] This same study cited a mean wage of roughly $16 per hour, but it emphasized that "independent interpreters with outstanding credentials may command relatively high salaries"[46] as high as $100 per hour. Job classification information available from county personnel departments in both Fresno and Kern counties indicate a similarly wide range of wages for Health Care Interpreters. In Fresno County, Medical Interpreters who work in non-supervisory capacity earn between $20,500 and $26,000 per year, while the earnings range for Clinical Health Care Interpreters in Kern County is $37,000-$45,000. There are no data to describe the demographic profile of this workforce; however, since an essential job function is fluency in a non-English language, there is likely a relatively high level of racial and ethnic diversity.

Health Care Interpreter is an emerging occupation, and its job tasks and responsibilities vary depending on the workplace setting. Generally, the role of the Health Care Interpreter is to serve as a conduit of information between medical staff and non-English-speaking patients. The interpreter's specific responsibilities may include assuring that information pertaining to the outpatient services or hospitalization is accurately communicated, seeing that the patient's questions and concerns regarding this information are appropriately addressed and documented, and providing interpreter services that convey the exact message rather than summarize the information in a way that is subjective. Requirements for employment as a Clinical Medical Interpreter in Kern County include coursework in medical terminology, previous experience translating or interpreting clinical information, possession of a Tier II Bilingual Certificate issued by Kern County, passage of the National Language Line Interpreter Competency exam and completion of an approved Health Care Interpreter training course.

As is the situation with Community Health Workers, there are no data available to describe recipients who receive formal training as Health Care Interpreters. According to the 2003 study cited above, the duration of formal programs ranges from 30 hours to more than 600 hours; most commonly, these programs are 40 hours in length. They typically cover roles and ethics, basic interpreting techniques, health and medical terminology and the role of cultural values in the experience of health care. County health departments have offered Health Care Interpreter training in the past[47] and may continue to do so. We were able to identify several formal Health Care Interpreter programs in the Central California Region: Reedley College offers a two-semester certificate program, Connecting Worlds offers training through Healthy House in Merced and the Monterey Institute for International Studies is developing a non-degree program in Medical Interpretation.

45 C. Dower, *Health Care Interpreters in California*, Center for the Health Professions, University of California San Francisco, 2003.

46 Ibid.

47 The California Healthcare Interpreting Association lists the Fresno County Health Department as offering a 30-hour training program.

… factors expected to drive health care job creation include emerging medical technologies, regulatory shifts in scope of practice, as well as changes in health care delivery setting [and] the need to replace workers.

Conclusion

The objective of this report is to help workforce professionals and policymakers engage in a strategic effort to develop the Central California Region's allied health workforce. The report provides basic data describing key components of such an effort: the region's population (and potential pool of labor); the broader, current health professions workforce; and recent graduates of regional health professions education programs, who represent the potential pool of new entrants to the workforce. The overarching framework of the analysis presented concerns the racial and ethnic composition of these groups and the workforce implications of this composition.

The Central California Region's current population of just under five million people is projected to grow by about three million over the next 25 years. Roughly 75% of this projected population increase is expected to come from growth in the Latino population. Strong overall population growth, as well as the projected increase in the proportion of the population of retirement age, is expected to create allied health care job opportunities. Other factors expected to drive health care job creation include emerging medical technologies, regulatory shifts in scope of practice, and changes in health care delivery settings (away from institutional-based care and into outpatient and home-based settings). Health care job creation will also be driven by the need to replace workers. In some entry-level occupations (such as nursing assistant), turnover rates have been reported to be as high as 90% per year.

It is important that the region's younger population be aware of and prepared to enter allied health workforce occupations. Statewide — these data are not specific to the Central California Region — there is a growing "achievement gap" among high school graduates that correlates with race, ethnicity and income.[48] Results from 2006 California Standards Test show that Latino and African-American high school students are significantly less successful in both language arts and mathematics than their white and Asian peers, even after controlling for socio-economic disadvantages.[49] Other working age adults could be a source for allied health education and training programs. Required entry-level skills and certain proficiency requirements present challenges in some parts of the Central California Region where English proficiency and other skills may be lacking.

Allied health occupations will offer a great deal of opportunity for employment in the region. The greatest number of opportunities will come in the form of entry-level occupations that are near the bottom of the wage scale. However, there are also many mid-level occupations where the educational requirement for entry into practice is a two-year associate's degree and for which the regional employment outlook is strong. Estimates from the American Community Survey (ACS) indicate that the region's entry-level health care workforce is already comparatively racially and ethnically diverse. The challenges in developing a more diverse allied health care workforce will be to increase the representation of Latino, African-American, Native American and underrepresented Asian groups in higher-

48 It is our assumption that these differences exist among high school students in the Central California Region as well.

49 Achievement Gap Fact Sheet: http://www.cde.ca.gov/eo/in/se/agfactsheet.asp

level education programs, to continue to recruit these students into the region's associate degree education programs, and to assist entry-level incumbent workers to advance along established career ladders that lead to occupations involving greater decision-making, greater responsibility, and that earn higher wages. Unfortunately, there are no readily available sources describing existing career ladder programs; often, these programs develop within a regional partnership of educators and providers. There is a need for more standardization of pathways and requirements in order to make career ladders a reality for the vast numbers of low-wage, entry-level health care workers.

Another set of issues that presents workforce development challenges involves access to programs and tuition costs. Access to educational programs includes geographic proximity, enrollment capacity and the cost of enrolling in a program. Appendix E includes a roster[50] of the regional educational providers and allied health programs offered. In the more rural counties of the region, data indicate that there almost no allied health training programs. It may be that the number of workers needed is too small to warrant new or dedicated programs. The lack of training opportunities may also reflect the challenge of finding resources to support a program. These data clearly point to a need for resource sharing within the region. We did not assess the current extent of resource sharing but suggest that distance education, onsite career programs, online courses, and innovative clinical training programs could be strong components of the regional workforce plan.

While the region's community colleges play an active role in educating allied health professionals, there are also a substantial number of private schools and colleges that offer allied health education programs. Private schools providing entry-level training may offer program flexibility and easier access than regional community colleges. However, this may come at greater financial cost for the student. A single year of education in a private, for-profit institution may cost in excess of $20,000 per year, compared with the roughly $1200 per year it costs to attend a California community college. A better understanding of how and why private, for-profit institutions have come to dominate the market for entry-level health occupations training may help in the development of less costly alternatives. In any case, increasing tuition assistance and loans should be considered as part of any regional workforce plan.

This report should serve as both a point of entry into the broader discussion of health care workforce development for those new to the field and an updated benchmark for those long familiar with the complex of issues that attend workforce planning. Another important use for this report is to highlight where more and improved data are needed to describe the health professions workforce and health professions student bodies at the regional level. In its current form, we hope that it provides a basis to support the process of allied health workforce development in the Central California Region.

There is a need for more standardization of pathways and requirements in order to make career ladders a reality for the vast numbers of low-wage, entry-level health care workers.

50 These are programs/providers that were identified by IPEDS completions data. There are other programs/providers in the region that do not report student data and are not readily identifiable. Furthermore, as we've noted, schools sometimes mistakenly report graduates of programs they do not actually offer. We've done our best to verify that when a school reported graduates of a particular program, it actually offers that program.

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Appendix A.

Detailed Listing of Occupations Used in This Report by Standard Occupation Classification

SOC 21-1000: Community and Social Service Counselors, Social Workers and Specialists

- Substance Abuse and Behavioral Disorder Counselors
- Educational, Vocational, and School Counselors
- Marriage and Family Therapists
- Mental Health Counselors
- Rehabilitation Counselors
- Child, Family and School Social Workers
- Medical and Public Health Social Workers
- Mental Health and Substance Abuse Social Workers
- Health Educators
- Social and Human Service Assistants

SOC 29-1000: Health Diagnosing and Treating Practitioners

- Chiropractors
- Dentists
- Dietitians and Nutritionists
- Optometrists
- Pharmacists
- Physicians and Surgeons
- Physician Assistants
- Podiatrists
- Registered Nurses
- Audiologists
- Occupational Therapists
- Physical Therapists
- Radiation Therapists
- Recreational Therapists
- Respiratory Therapists
- Speech-Language Therapists

SOC 29-2000: Health Technologists and Technicians

- Medical and Clinical Laboratory Technologists
- Medical and Clinical Laboratory Technicians
- Dental Hygienists
- Cardiovascular Technologists and Technicians
- Diagnostic Medical Sonographers
- Nuclear Medicine Technologists
- Radiologic Technologists and Technicians
- Emergency Medical Technicians and Paramedics
- Dietetic Technicians
- Pharmacy Technicians
- Psychiatric Technicians
- Respiratory Therapy Technicians
- Surgical Technologists
- Licensed Vocational/Practical Nurses
- Medical Records and Health Information Technicians
- Opticians, Dispensing

SOC 31-0000: Healthcare Support Occupations

- Home Health Aides
- Nursing Aides, Orderlies and Attendants
- Psychiatric Aides
- Occupational Therapist Assistants and Aides
- Physical Therapist Assistants and Aides
- Dental Assistants
- Medical Assistants
- Pharmacy Aides

Appendix B.
2005 Median Age by Race/Ethnicity and by County: Central California Region

County	Latino	White	Asian	African American	American Indian/ Native Alaskan	Native Hawaiian/ Pacific Islander	Multirace
Amador	27	48	36	32	40	–	23
Calaveras	28	48	46	43	40	–	24
Fresno	24	40	25	27	33	31	15
Inyo	24	48	41	–	34	–	17
Kern	23	37	35	29	37	32	16
Kings	25	35	36	33	31	32	16
Madera	25	43	39	35	37	34	28
Mariposa	29	47	46	38	39	–	29
Merced	23	39	23	32	40	32	17
Mono	25	43	37	–	39		21
Monterey	23	46	40	34	41	33	19
San Benito	26	40	38	39	42	–	17
San Joaquin	21	39	23	28	38	30	16
San Luis Obispo	24	43	30	35	41	34	22
Santa Cruz	25	41	35	35	38	34	22
Stanislaus	20	39	34	27	38	30	21
Tulare	23	40	31	28	35	31	20
Tuolumne	28	48	41	33	39	–	25

Source: California Department of Finance, Demographic Research Unit

Appendix C.
2005/2006 Median Age by Selected Asian Group: Central California Region

Selected Asian Group	Median Age
Japanese	48
Chinese	40
Filipino	39
Korean	39
Asian Indian	36
Vietnamese	34
Laotian	32
Cambodian	27
Hmong	21

Source: Combined 2005 and 2006 American Community Survey PUMS for California

Appendix D1.
Fresno County: 2006 Estimated Employment, Employment per Population, 2007 Median Annual Wage and 2004-2014 Job Openings/Year by Occupation

Occupation	Estimated Employment	Estimated Employment per 100,000 Population	Median Annual Wage	Avg. # of Job Openings Per Year
Dental Assistant	1,000	108	$30,243	44
Dental Hygienist	370†	40†	$50,523	11
Medical Assistant	1,500	163	$27,560	81
Pharmacy Technician	550	60	$33,509	16
Home Health Aide	1,230	133	$17,846	87
Nursing Aide	2,650	287	$23,171	75
Licensed Vocational Nurse	1,360	147	$42,973	52
Physician Assistant	220	24	$88,338	6
Respiratory Therapist	250†	27†	$60,674	15
Radiologic Technologist	390†	42†	$61,693	16
Clinical Laboratory Scientist	270	29	$66,435	16
EMT/Paramedic	–	–		12
Psychiatric Technician	–	–	$47,091	2
Mental Health Counselor	–	–	–	–
Mental Health and Substance Abuse Social Worker	220	24	$49,837	10
Substance Abuse and Behavioral Disorder Counselor	220	23	$30,451	9
Medical and Public Health Social Worker	170	18	$30,846†	8
Community and Social Service Specialist: Health Educator	150	16	$36,878	7

† *2005 employment estimate or 2006 wage estimate*
Source: California Employment Development Department, Labor Market Information Division

Appendix D2.
Kern County: 2006 Estimated Employment, Employment per Population, 2007 Median Annual Wage and 2004-2014 Job Openings/Year by Occupation

Occupation	Estimated Employment	Estimated Employment per 100,000 Population	Median Annual Wage	Avg. # of Job Openings Per Year
Dental Assistant	950	117	$25,230	49
Dental Hygienist	180	22	$84,115	6
Medical Assistant	1,590	196	$24,918	71
Pharmacy Technician	410	51	$32,947	14
Home Health Aide	1,230	152	$18,075	80
Nursing Aide	1,390	172	$20,405	29
Licensed Vocational Nurse	730	90	$42,016	20
Physician Assistant	130	16	$93,933	6
Respiratory Therapist	160†	20†	$57,534	7
Radiologic Technologist	–	–	$51,272	7
Clinical Laboratory Scientist	180†	22†	$68,598	7
EMT/Paramedic	120†	15†		3
Psychiatric Technician	–	–	$48,298	–
Mental Health Counselor	–	–	$41,184	14
Mental Health and Substance Abuse Social Worker	230†	28†	–	9
Substance Abuse and Behavioral Disorder Counselor	170	21	$44,429	12
Medical and Public Health Social Worker	50	6	$54,163	2
Community and Social Service Specialist: Health Educator	110	14	$30,971	2

† *2005 employment estimate or 2006 wage estimate*
Source: California Employment Development Department, Labor Market Information Division

Appendix D3.
Kings County: 2006 Estimated Employment, Employment per Population, 2007 Median Annual Wage and 2004-2014 Job Openings/Year by Occupation

Occupation	Estimated Employment	Estimated Employment per 100,000 Population	Median Annual Wage	Avg. # of Job Openings Per Year
Dental Assistant	130	85	$31,304	3
Dental Hygienist	–	–	–	–
Medical Assistant	380†	248†	$23,712†	14
Pharmacy Technician	60†	39†	$32,573	4
Home Health Aide	180	117	$17,555	11
Nursing Aide	270	176	$21,570	10
Licensed Vocational Nurse	130	85	$37,232	2
Physician Assistant	–	–	$101,421†	–
Respiratory Therapist	–	–	–	–
Radiologic Technologist	–	–	$48,880	–
Clinical Laboratory Scientist	–	–	–	–
EMT/Paramedic	–	–		0
Psychiatric Technician	–	–	–	0
Mental Health Counselor	–	–	–	2
Mental Health and Substance Abuse Social Worker	–	–	$59,821†	–
Substance Abuse and Behavioral Disorder Counselor	–	–	–	–
Medical and Public Health Social Worker	–	–	$67,746	–
Community and Social Service Specialist: Health Educator	90	59	$29,931	3

† *2005 employment estimate or 2006 wage estimate*
Source: California Employment Development Department, Labor Market Information Division

Appendix D4.
Madera County: 2006 Estimated Employment, Employment per Population, 2007 Median Annual Wage and 2004-2014 Job Openings/Year by Occupation

Occupation	Estimated Employment	Estimated Employment per 100,000 Population	Median Annual Wage	Avg. # of Job Openings Per Year
Dental Assistant	110	73	$30,825	3
Dental Hygienist	50	33	$77,730	–
Medical Assistant	330	220	$25,501	19
Pharmacy Technician	120	80	$32,344	4
Home Health Aide	–	–	–	–
Nursing Aide	490†	327†	$23,109	13
Licensed Vocational Nurse	200†	133†	$42,037	4
Physician Assistant	–	–	–	–
Respiratory Therapist	–	–	–	–
Radiologic Technologist	–	–	–	–
Clinical Laboratory Scientist	–	–	–	–
EMT/Paramedic	–	–		–
Psychiatric Technician	–	–	–	–
Mental Health Counselor	30†	20†	$72,613†	2
Mental Health and Substance Abuse Social Worker	–	–	–	2
Substance Abuse and Behavioral Disorder Counselor	–	–	–	–
Medical and Public Health Social Worker	–	–	–	–
Community and Social Service Specialist: Health Educator	40	27	$36,130	3

† *2005 employment estimate or 2006 wage estimate*
Source: California Employment Development Department, Labor Market Information Division

Appendix D5.
Merced County: 2006 Estimated Employment, Employment per Population, 2007 Median Annual Wage and 2004-2014 Job Openings/Year by Occupation

Occupation	Estimated Employment	Estimated Employment per 100,000 Population	Median Annual Wage	Avg. # of Job Openings Per Year
Dental Assistant	160	63	$29,598	8
Dental Hygienist	110	44	$91,770	0
Medical Assistant	320†	127†	$26,541	11
Pharmacy Technician	70†	28†	$33,051	3
Home Health Aide	240†	95†	$17,867	15
Nursing Aide	400	158	$22,464	10
Licensed Vocational Nurse	180†	71†	$45,032	5
Physician Assistant	30	12	$95,493	1
Respiratory Therapist	50†	20†	$58,448†	3
Radiologic Technologist	40†	16†	$56,638†	1
Clinical Laboratory Scientist	30†	12†	$67,704	1
EMT/Paramedic	–	–		–
Psychiatric Technician	–	–	–	–
Mental Health Counselor	–	–	–	–
Mental Health and Substance Abuse Social Worker	–	–	–	–
Substance Abuse and Behavioral Disorder Counselor	50†	20†	$29,910†	3
Medical and Public Health Social Worker	50†	20†	$53,602	2
Community and Social Service Specialist: Health Educator	50†	20†	$37,066	2

† *2005 employment estimate or 2006 wage estimate*
Source: California Employment Development Department, Labor Market Information Division

Appendix D6.
Monterey County: 2006 Estimated Employment, Employment per Population, 2007 Median Annual Wage and 2004-2014 Job Openings/Year by Occupation

Occupation	Estimated Employment	Estimated Employment per 100,000 Population	Median Annual Wage	Avg. # of Job Openings Per Year
Dental Assistant	550	129	$35,714	27
Dental Hygienist	–	–	$107,910	4
Medical Assistant	680	160	$31,803	22
Pharmacy Technician	230	54	$39,686	9
Home Health Aide	560	132	$21,008	19
Nursing Aide	790	186	$25,542	18
Licensed Vocational Nurse	540	127	$49,088	16
Physician Assistant	50	12	$79,643	–
Respiratory Therapist	–	–	–	–
Radiologic Technologist	110†	26†	$69,410	5
Clinical Laboratory Scientist	110	26	$76,274	5
EMT/Paramedic	–	–		–
Psychiatric Technician	–	–	$48,838†	–
Mental Health Counselor	150†	35†	$33,093	5
Mental Health and Substance Abuse Social Worker	80†	19†	$42,494	2
Substance Abuse and Behavioral Disorder Counselor	–	–	$32,427	3
Medical and Public Health Social Worker	120	28	$64,002	2
Community and Social Service Specialist: Health Educator	110†	26†	$37,586	3

† *2005 employment estimate or 2006 wage estimate*
Source: California Employment Development Department, Labor Market Information Division

Appendix D7.
San Joaquin County: 2006 Estimated Employment, Employment per Population, 2007 Median Annual Wage and 2004-2014 Job Openings/Year by Occupation

Occupation	Estimated Employment	Estimated Employment per 100,000 Population	Median Annual Wage	Avg. # of Job Openings Per Year
Dental Assistant	700	103	$26,894	34
Dental Hygienist	290	43	$86,008	7
Medical Assistant	710†	104†	$24,253	37
Pharmacy Technician	560	82	$34,611	22
Home Health Aide	1030†	151†	$17,722	72
Nursing Aide	2010	296	$23,712	60
Licensed Vocational Nurse	900	132	$45,698	31
Physician Assistant	50	7	$72,883	3
Respiratory Therapist	210	31	$61,360	19
Radiologic Technologist	210†	31†	$68,723	12
Clinical Laboratory Scientist	220	32	$72,405	12
EMT/Paramedic	130†	19†		5
Psychiatric Technician	40†	6†	$45,198	–
Mental Health Counselor	310	46	$35,922	10
Mental Health and Substance Abuse Social Worker	400†	59†	$41,246	18
Substance Abuse and Behavioral Disorder Counselor	–	–	–	–
Medical and Public Health Social Worker	90†	13†	$58,198	5
Community and Social Service Specialist: Health Educator	60	9	$31,845	2

† *2005 employment estimate or 2006 wage estimate*
Source: California Employment Development Department, Labor Market Information Division

Appendix D8.
San Luis Obispo County: 2006 Estimated Employment, Employment per Population, 2007 Median Annual Wage and 2004-2014 Job Openings/Year by Occupation

Occupation	Estimated Employment	Estimated Employment per 100,000 Population	Median Annual Wage	Avg. # of Job Openings Per Year
Dental Assistant	410	153	$31,949	20
Dental Hygienist	190	71	$75,774	7
Medical Assistant	350†	131†	$31,075	16
Pharmacy Technician	160	60	$35,589	5
Home Health Aide	350	131	$21,362	27
Nursing Aide	560	210	$22,485	18
Licensed Vocational Nurse	260	97	$44,075	12
Physician Assistant	40	15	$84,094	1
Respiratory Therapist	–	–	–	–
Radiologic Technologist	80	30	$53,061	5
Clinical Laboratory Scientist	80†	30†	$56,576†	4
EMT/Paramedic	–	–		–
Psychiatric Technician	–	–	–	18
Mental Health Counselor	–	–	$26,978†	10
Mental Health and Substance Abuse Social Worker	–	–	$77,418†	4
Substance Abuse and Behavioral Disorder Counselor	–	–	$26,957	3
Medical and Public Health Social Worker	100†	37†	$56,243	4
Community and Social Service Specialist: Health Educator	30	11	$28,142	–

† 2005 employment estimate or 2006 wage estimate
Source: California Employment Development Department, Labor Market Information Division

Appendix D9.
Santa Cruz County: 2006 Estimated Employment, Employment per Population, 2007 Median Annual Wage and 2004-2014 Job Openings/Year by Occupation

Occupation	Estimated Employment	Estimated Employment per 100,000 Population	Median Annual Wage	Avg. # of Job Openings Per Year
Dental Assistant	300	113	$26,894	15
Dental Hygienist	290	109	$86,008	9
Medical Assistant	340	128	$24,253	17
Pharmacy Technician	160	60	$34,611	5
Home Health Aide	300	113	$17,722	12
Nursing Aide	570	215	$23,712	12
Licensed Vocational Nurse	170	64	$45,698	5
Physician Assistant	80	30	$72,883	4
Respiratory Therapist	–	–	$61,360	–
Radiologic Technologist	70	26	$68,723	2
Clinical Laboratory Scientist	–	–	$72,405	–
EMT/Paramedic	–	–		5
Psychiatric Technician	–	–	$45,198	–
Mental Health Counselor	170	64	$35,922	6
Mental Health and Substance Abuse Social Worker	210	79	$41,246	6
Substance Abuse and Behavioral Disorder Counselor	–	–	–	–
Medical and Public Health Social Worker	–	–	$58,198	–
Community and Social Service Specialist: Health Educator	110†	41†	$31,845	3

† *2005 employment estimate or 2006 wage estimate*
Source: California Employment Development Department, Labor Market Information Division

Appendix D10.
Stanislaus County: 2006 Estimated Employment, Employment per Population, 2007 Median Annual Wage and 2004-2014 Job Openings/Year by Occupation

Occupation	Estimated Employment	Estimated Employment per 100,000 Population	Median Annual Wage	Avg. # of Job Openings Per Year
Dental Assistant	720	138	$28,454	34
Dental Hygienist	270	52	$95,264	9
Medical Assistant	810	155	$24,752	35
Pharmacy Technician	360	69	$33,966	8
Home Health Aide	540	103	$17,930	37
Nursing Aide	1,550	296	$23,005	39
Licensed Vocational Nurse	750	143	$46,155	22
Physician Assistant	30†	6†	$99,736	–
Respiratory Therapist	250	48	$60,028	14
Radiologic Technologist	200	38	$61,360	7
Clinical Laboratory Scientist	80	15	$64,626	4
EMT/Paramedic	190†	36†		4
Psychiatric Technician	–	–	–	–
Mental Health Counselor	–	–	–	5
Mental Health and Substance Abuse Social Worker	110†	21†	$34,216	2
Substance Abuse and Behavioral Disorder Counselor	70	13	$35,298	–
Medical and Public Health Social Worker	130†	25†	$61,776	4
Community and Social Service Specialist: Health Educator	–	–	$22,776	4

† *2005 employment estimate or 2006 wage estimate*
Source: California Employment Development Department, Labor Market Information Division

Appendix D11.
Tulare County: 2006 Estimated Employment, Employment per Population, 2007 Median Annual Wage and 2004-2014 Job Openings/Year by Occupation

Occupation	Estimated Employment	Estimated Employment per 100,000 Population	Median Annual Wage	Avg. # of Job Openings Per Year
Dental Assistant	420	97	$26,894	16
Dental Hygienist	180	42	$72,821	2
Medical Assistant	580	135	$25,168	27
Pharmacy Technician	260	60	$32,198	8
Home Health Aide	530†	123†	$18,533	21
Nursing Aide	1,510†	350†	$20,509	23
Licensed Vocational Nurse	570†	132†	$40,498	12
Physician Assistant	40†	9†	$90,584	2
Respiratory Therapist	120	28	$50,898	–
Radiologic Technologist	130	30	$62,566	3
Clinical Laboratory Scientist	170	39	$64,792	6
EMT/Paramedic	100†	23†		2
Psychiatric Technician	820†	190†	$45,198	10
Mental Health Counselor	–	–	–	2
Mental Health and Substance Abuse Social Worker	370	86	$34,549	7
Substance Abuse and Behavioral Disorder Counselor	190†	44†	$29,349	7
Medical and Public Health Social Worker	80†	19†	$50,835	2
Community and Social Service Specialist: Health Educator	–	–	–	–

† *2005 employment estimate or 2006 wage estimate*
Source: California Employment Development Department, Labor Market Information Division

Appendix D12.
Mother Lode Region: 2006 Estimated Employment, Employment per Population, 2007 Median Annual Wage and 2004-2014 Job Openings/Year by Occupation

Occupation	Estimated Employment	Estimated Employment per 100,000 Population	Median Annual Wage	Avg. # of Job Openings Per Year
Dental Assistant	180	113	$32,302	10
Dental Hygienist	80	50	$94,806	1
Medical Assistant	270	169	$27,997	14
Pharmacy Technician	100	63	$32,989	3
Home Health Aide	110†	69†	$20,197	9
Nursing Aide	450	282	$23,608	14
Licensed Vocational Nurse	200	125	$42,494	3
Physician Assistant	–	–	$91,125	–
Respiratory Therapist	50	31	$57,262	2
Radiologic Technologist	50	31	$57,637	2
Clinical Laboratory Scientist	30	19	$71,490	2
EMT/Paramedic	190†	119†		5
Psychiatric Technician	–	–	–	–
Mental Health Counselor	30†	19†	$75,878†	1
Mental Health and Substance Abuse Social Worker	40	25	$30,118	–
Substance Abuse and Behavioral Disorder Counselor	–	–	$32,406†	–
Medical and Public Health Social Worker	30†	19†	$46,030†	2
Community and Social Service Specialist: Health Educator	30†	19†	$29,598	0

† 2005 employment estimate or 2006 wage estimate
Source: California Employment Development Department, Labor Market Information Division

Appendix D13.
Eastern Sierra Region: 2006 Estimated Employment, Employment per Population, 2007 Median Annual Wage and 2004-2014 Job Openings/Year by Occupation

Occupation	Estimated Employment	Estimated Employment per 100,000 Population	Median Annual Wage	Avg. # of Job Openings Per Year
Dental Assistant	–	–	$33,613	–
Dental Hygienist	–	–	–	–
Medical Assistant	50	149	$27,456	2
Pharmacy Technician	–	–	$30,035	1
Home Health Aide	–	–	–	–
Nursing Aide	110†	328†	$24,710	5
Licensed Vocational Nurse	40†	119†	$42,286	1
Physician Assistant	–	–	–	–
Respiratory Therapist	–	–	–	1
Radiologic Technologist	–	–	–	–
Clinical Laboratory Scientist	–	–	$72,176	0
EMT/Paramedic	50†	149†		1
Psychiatric Technician	–	–	–	–
Mental Health Counselor	–	–	$54,746†	1
Mental Health and Substance Abuse Social Worker	30	89	$35,984	0
Substance Abuse and Behavioral Disorder Counselor	–	–	–	0
Medical and Public Health Social Worker	–	–	–	0
Community and Social Service Specialist: Health Educator	–	–	$43,826	1

† *2005 employment estimate or 2006 wage estimate*
Source: California Employment Development Department, Labor Market Information Division

Appendix E lists those institutions in each county that reported graduates of the selected allied health education programs. It is not an exhaustive catalog of all available training opportunities. For example, it does not list adult vocational programs or regional occupations programs (ROP), because these programs do not report student data. Sometimes schools mistakenly report graduates of programs they do not actually offer. Short of combing through the catalog of each individual institution in the region, we have made efforts to verify that schools reporting graduates of one of the selected allied health education programs actually hosts that program.

Appendix E1.
Fresno County: Program and Institution Listing

Program and Institution	City	Zip
Dental Assistant		
Maric College–Fresno	Clovis	93612
San Joaquin Valley College–Fresno	Fresno	93710
MCed Career College	Fresno	93727
Galen College of Medical and Dental Assistants	Fresno	93728
Reedley College	Reedley	93654
Dental Hygiene		
Fresno City College	Fresno	93741
Medical Assistant		
Clovis Adult Education	Clovis	93611
Institute of Technology Inc	Clovis	93612
Maric College–Fresno	Clovis	93612
Milan Institute	Clovis	93612
Heald College–Fresno	Fresno	93704
San Joaquin Valley College–Fresno	Fresno	93710
MCed Career College	Fresno	93727
Galen College of Medical and Dental Assistants	Fresno	93728
Fresno City College	Fresno	93741
Licensed Vocational Nurse		
Clovis Adult Education	Clovis	93611
Nurse Practitioner		
California State University–Fresno	Fresno	93740
Respiratory Therapy		
Fresno City College	Fresno	93741
Radiologic Technology		
Fresno City College	Fresno	93741

continued overleaf

Appendix E1. (continued)
Fresno County: Program and Institution Listing

Program and Institution	City	Zip
EMT/Paramedic		
Fresno City College	Fresno	93741
Psychiatric Technician		
West Hills College–Coalinga	Coalinga	93210
Clinical/Counseling Psychology (Master's)		
California State University-Fresno	Fresno	93740
Clinical Psychology (Doctorate)		
Alliant International University	Fresno	93727
Social Work (Master's)		
California State University–Fresno	Fresno	93740
Public Health (Master's and Bachelor's)		
California State University–Fresno	Fresno	93740
Substance Abuse/Addiction Counseling (Associate's)		
Fresno City College	Fresno	93741

Appendix E2.
Kern County: Program and Institution Listing

Program and Institution	City	Zip
Dental Assistant		
California College of Vocational Careers	Bakersfield	93301
Maric College–Bakersfield	Bakersfield	93304
San Joaquin Valley College–Bakersfield	Bakersfield	93309
Dental Hygiene		
Taft College	Taft	93268
Medical Assistant		
Maric College–Bakersfield	Bakersfield	93304
San Joaquin Valley College–Bakersfield	Bakersfield	93309
Santa Barbara Business College	Bakersfield	93309
Licensed Vocational Nurse		
Bakersfield College	Bakersfield	93305
Nurse Practitioner		
California State University–Bakersfield	Bakersfield	93311
Physician Assistant		
San Joaquin Valley College–Bakersfield	Bakersfield	93309
Respiratory Therapy		
San Joaquin Valley College–Bakersfield	Bakersfield	93309
Radiologic Technology		
Bakersfield College	Bakersfield	93305
Social Work (Master's)		
California State University–Bakersfield	Bakersfield	93311

Appendix E3.
Merced County: Program and Institution Listing

Program and Institution	City	Zip
Licensed Vocational Nurse		
Merced College	Merced	95348
Radiologic Technology		
Merced College	Merced	95348
Substance Abuse/Addiction Counseling (Associate's)		
Merced College	Merced	95348

Appendix E4.
Monterey County: Program and Institution Listing

Program and Institution	City	Zip
Dental Assistant		
Monterey Peninsula College	Monterey	93940
Medical Assistant		
Monterey Peninsula College	Monterey	93940
Central Coast College	Salinas	93901
Heald College–Salinas	Salinas	93906
Licensed Vocational Nurse		
Hartnell College	Salinas	93901
Substance Abuse/Addiction Counseling (Associate's)		
Hartnell College	Salinas	93901

Appendix E5.
San Joaquin County: Program and Institution Listing

Program and Institution	City	Zip
Dental Assistant		
Maric College–Stockton	Stockton	95207
Heald College–Stockton	Stockton	95210
Dental Hygiene		
University of the Pacific	Stockton	95211
Medical Assistant		
MTI Business College Inc	Stockton	95207
Maric College–Stockton	Stockton	95207
Heald College–Stockton	Stockton	95210
Licensed Vocational Nurse		
San Joaquin Delta College	Stockton	95207
Radiologic Technology		
San Joaquin Delta College	Stockton	95207
Psychiatric Technician		
San Joaquin Delta College	Stockton	95207
Substance Abuse/Addiction Counseling (Associate's)		
San Joaquin Delta College	Stockton	95207
Gerontology		
San Joaquin Delta College	Stockton	95207

Appendix E6.
San Luis Obispo County: Program and Institution Listing

Program and Institution	City	Zip
Dental Assistant		
Central California School	San Luis Obispo	93401
Medical Assistant		
Central California School	San Luis Obispo	93401
Cuesta College	San Luis Obispo	93403
Licensed Vocational Nurse		
Cuesta College	San Luis Obispo	93403
EMT/Paramedic		
Cuesta College	San Luis Obispo	93403
Psychiatric Technician		
Cuesta College	San Luis Obispo	93403
Clinical/Counseling Psychology (Master's)		
California Polytechnic State University–San Luis Obispo	San Luis Obispo	93407

Appendix E7.
Santa Cruz County: Program and Institution Listing

Program and Institution	City	Zip
Dental Hygiene		
Cabrillo College	Aptos	95003
Medical Assistant		
Cabrillo College	Aptos	95003
Radiologic Technology		
Cabrillo College	Aptos	95003
Clinical/Counseling Psychology (Master's)		
Bethany University	Scotts Valley	95066
Substance Abuse/Addiction Counseling (Associate's)		
Bethany University	Scotts Valley	95066

Appendix E8.
Stanislaus County: Program and Institution Listing

Program and Institution	City	Zip
Dental Assistant		
Galen College of Medical and Dental Assistants	Modesto	95350
Modesto Junior College	Modesto	95350
Medical Assistant		
Galen College of Medical and Dental Assistants	Modesto	95350
Modesto Junior College	Modesto	95350
San Joaquin Valley College–Modesto Campus	Modesto	95350
Maric College–Modesto Campus	Salida	95368
Licensed Vocational Nurse		
Modesto Junior College	Modesto	95350
Respiratory Therapy		
Modesto Junior College	Modesto	95350
Maric College–Modesto Campus	Salida	95368
Clinical/Counseling Psychology (Master's)		
California State University–Stanislaus	Turlock	95382
Social Work (Master's)		
California State University–Stanislaus	Turlock	95382
Substance Abuse/Addiction Counseling (Associate's)		
Modesto Junior College	Modesto	95350

Appendix E9.
Tulare County: Program and Institution Listing

Program and Institution	City	Zip
Dental Assistant		
Galen College of Medical and Dental Assistants	Visalia	93277
San Joaquin Valley College	Visalia	93291
Dental Hygiene		
San Joaquin Valley College	Visalia	93291
Medical Assistant		
Milan Institute	Visalia	93277
Golden State College	Visalia	93277
Galen College of Medical and Dental Assistants	Visalia	93277
San Joaquin Valley College	Visalia	93291
Licensed Vocational Nurse		
Porterville College	Porterville	93257
San Joaquin Valley College	Visalia	93291
Physician Assistant		
San Joaquin Valley College	Visalia	93291
Respiratory Therapy		
San Joaquin Valley College	Visalia	93291
EMT/Paramedic		
College of the Sequoias	Visalia	93277
Psychiatric Technician		
Porterville College	Porterville	93257
Substance Abuse/Addiction Counseling (Associate's)		
Porterville College	Porterville	93257

Appendix E10.
Tuolumne County: Program and Institution Listing

Program and Institution	City	Zip
EMT/Paramedic		
Columbia College	Sonora	95370

Appendix F.

Population Projections by County

Source: California Department of Finance, Demographic Research Unit. Race/Ethnic Population with Age and Sex Detail, 2000–2050. Sacramento, CA. July 2007.

Figure F1.

2005–2030 Projected Population by Race/Ethnicity (Percentage): Amador County

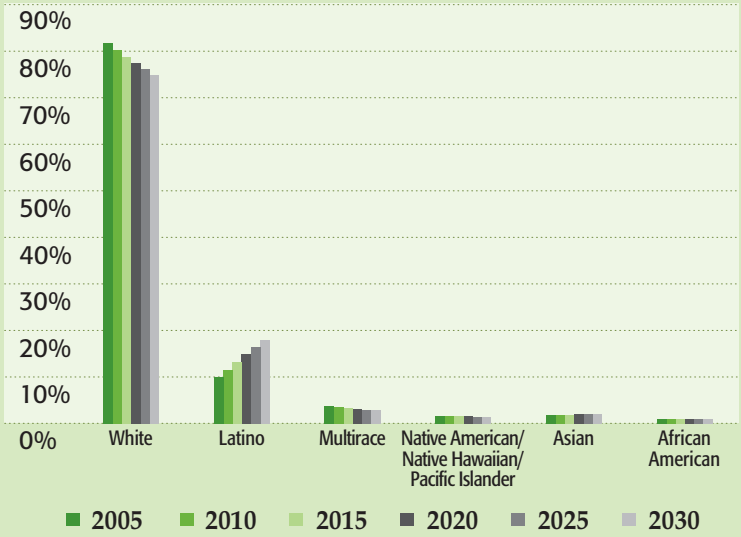

Table F1.

2005–2030 Projected Population by Race/Ethnicity (Number): Amador County

Year	Total	White	Latino	Asian	African American	Multirace	Native American	Native Hawaiian/ Pacific Islander
2000	35,357	29,334	3,089	318	1,434	575	576	31
2005	38,140	31,221	3,826	332	1,449	691	590	31
2010	40,337	32,410	4,676	374	1,467	760	619	31
2015	44,020	34,710	5,861	422	1,492	846	658	31
2020	47,593	36,843	7,122	461	1,513	933	690	31
2025	51,331	39,081	8,468	488	1,535	1,018	710	31
2030	54,788	40,991	9,856	522	1,553	1,110	728	28

Appendix F. (continued)
Population Projections by County

Figure F2.
2005–2030 Projected Population by Race/Ethnicity (Percentage): Calaveras County

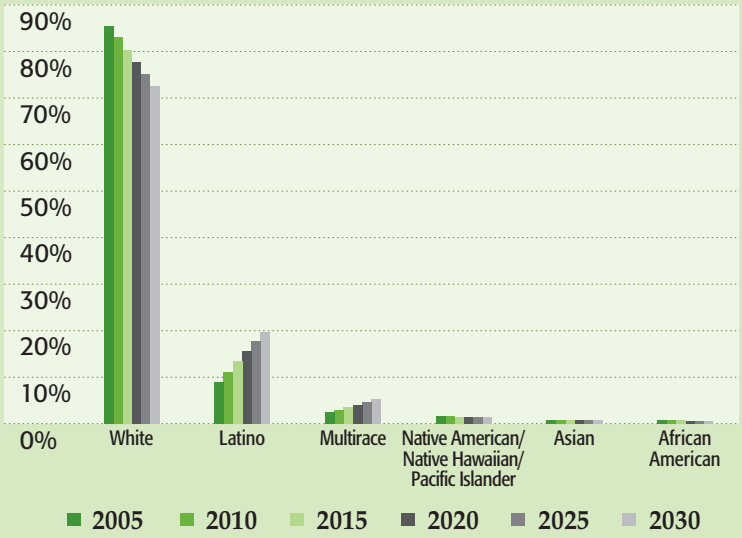

Table F2.
2005–2030 Projected Population by Race/Ethnicity (Number): Calaveras County

Year	Total	White	Latino	Asian	African American	Multirace	Native American	Native Hawaiian/ Pacific Islander
2000	40,870	35,857	2,788	342	327	886	630	40
2005	45,124	38,535	4,070	348	331	1,140	660	40
2010	47,750	39,684	5,284	368	341	1,344	681	48
2015	52,111	41,823	6,977	388	351	1,801	715	56
2020	56,318	43,695	8,754	406	363	2,295	749	56
2025	60,632	45,481	10,700	422	364	2,834	775	56
2030	64,572	46,791	12,744	428	361	3,397	791	60

Appendix F. (continued)
Population Projections by County

Figure F3.
2005–2030 Projected Population by Race/Ethnicity (Percentage): Fresno County

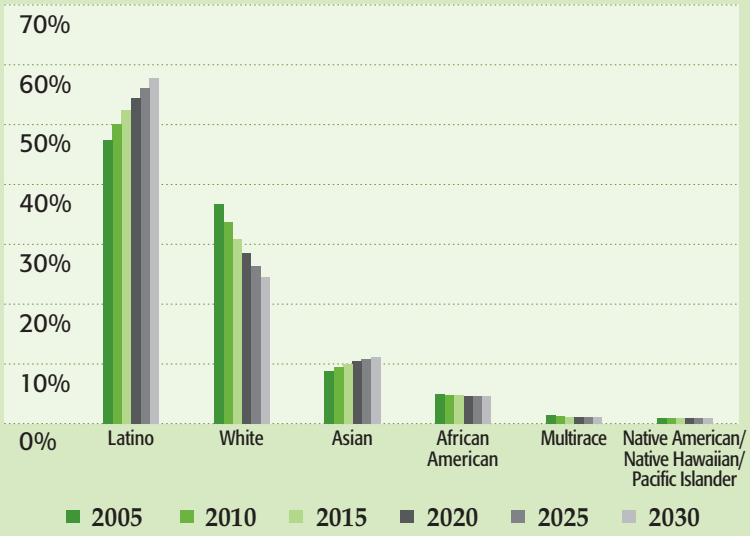

Table F3.
2005–2030 Projected Population by Race/Ethnicity (Number): Fresno County

Year	Total	White	Latino	Asian	African American	Multirace	Native American	Native Hawaiian/ Pacific Islander
2000	804,508	324,947	353,921	66,240	41,134	11,132	6,423	711
2005	891,502	327,338	422,135	78,744	43,317	11,961	7,272	735
2010	983,478	331,144	492,449	92,099	46,797	11,775	8,412	802
2015	1,090,531	336,713	571,225	108,376	51,446	12,305	9,600	866
2020	1,201,792	342,241	653,416	125,340	56,149	13,001	10,730	915
2025	1,314,530	346,635	737,532	142,203	61,072	14,327	11,810	951
2030	1,429,228	349,834	824,824	158,969	65,989	15,750	12,880	982

Appendix F. (continued)
Population Projections by County

Figure F4.
2005–2030 Projected Population by Race/Ethnicity (Percentage): Inyo County

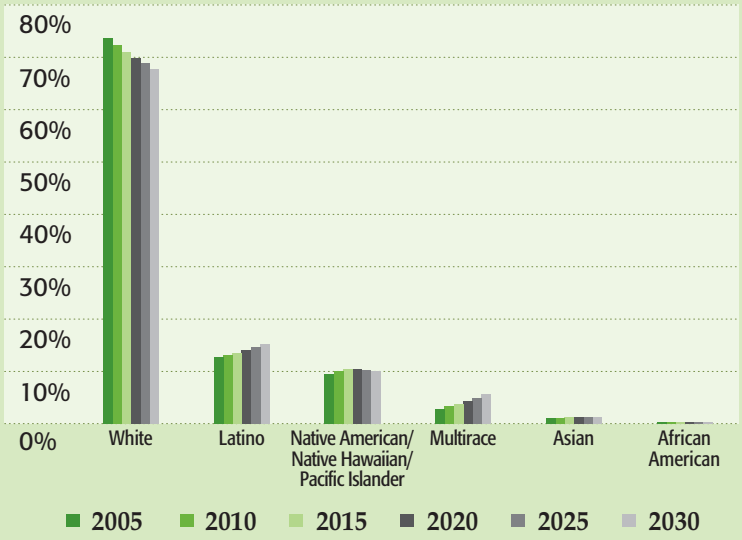

Table F4.
2005–2030 Projected Population by Race/Ethnicity (Number): Inyo County

Year	Total	White	Latino	Asian	African American	Multirace	Native American	Native Hawaiian/ Pacific Islander
2000	18,181	13,594	2,275	178	20	395	1,701	18
2005	18,859	13,899	2,389	187	62	535	1,769	18
2010	19,183	13,859	2,495	208	62	633	1,908	18
2015	19,800	14,045	2,661	231	62	744	2,039	18
2020	20,495	14,312	2,866	251	62	871	2,115	18
2025	21,351	14,695	3,113	267	62	1,032	2,164	18
2030	22,132	15,002	3,340	278	62	1,228	2,204	18

Appendix F. (continued)
Population Projections by County

Figure F5.
2005–2030 Projected Population by Race/Ethnicity (Percentage): Kern County

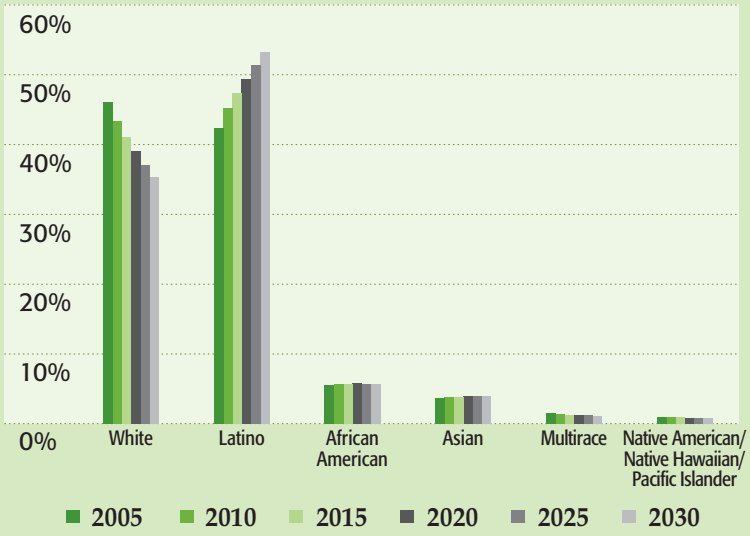

Table F5.
2005–2030 Projected Population by Race/Ethnicity (Number): Kern County

Year	Total	White	Latino	Asian	African American	Multirace	Native American	Native Hawaiian/ Pacific Islander
2000	665,519	332,431	255,578	22,184	38,401	10,092	6,074	759
2005	770,151	354,615	326,335	27,883	42,672	11,186	6,669	791
2010	871,728	377,280	393,612	32,619	48,703	11,481	7,162	871
2015	976,649	400,746	462,503	37,344	55,390	12,080	7,635	951
2020	1,086,113	424,169	535,612	42,178	62,233	12,833	8,069	1,019
2025	1,215,857	450,835	623,828	48,060	69,589	13,926	8,543	1,076
2030	1,352,627	477,348	719,004	53,871	77,216	15,091	8,966	1,131

Appendix F. (continued)
Population Projections by County

Figure F6.
2005–2030 Projected Population by Race/Ethnicity (Percentage): Kings County

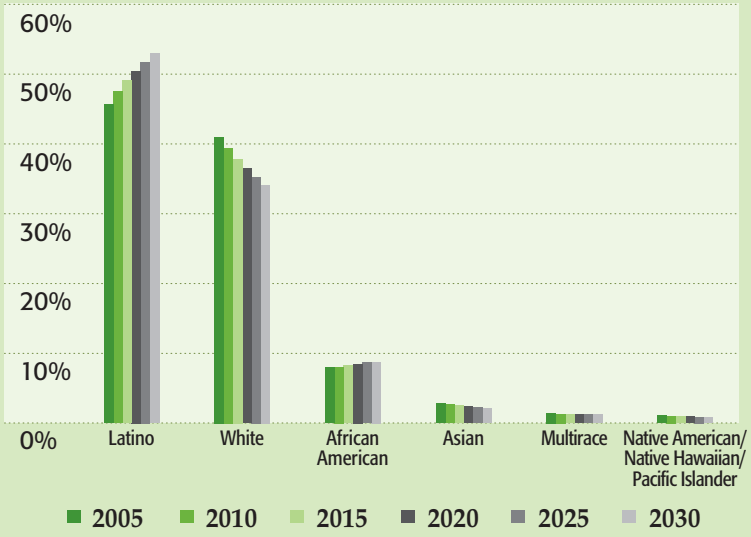

Table F6.
2005–2030 Projected Population by Race/Ethnicity (Number): Kings County

Year	Total	White	Latino	Asian	African American	Multirace	Native American	Native Hawaiian/ Pacific Islander
2000	130,202	55,387	56,738	3,980	10,551	1,992	1,337	217
2005	146,817	60,217	66,992	4,122	11,720	2,152	1,379	235
2010	164,535	64,833	78,139	4,448	13,213	2,167	1,470	265
2015	184,638	69,845	90,575	4,731	15,303	2,335	1,554	295
2020	205,707	75,001	103,787	4,993	17,453	2,513	1,635	325
2025	227,588	80,204	117,716	5,183	19,675	2,762	1,693	355
2030	250,516	85,464	132,613	5,310	21,970	3,031	1,735	393

Appendix F. (continued)
Population Projections by County

Figure F7.
2005–2030 Projected Population by Race/Ethnicity (Percentage): Madera County

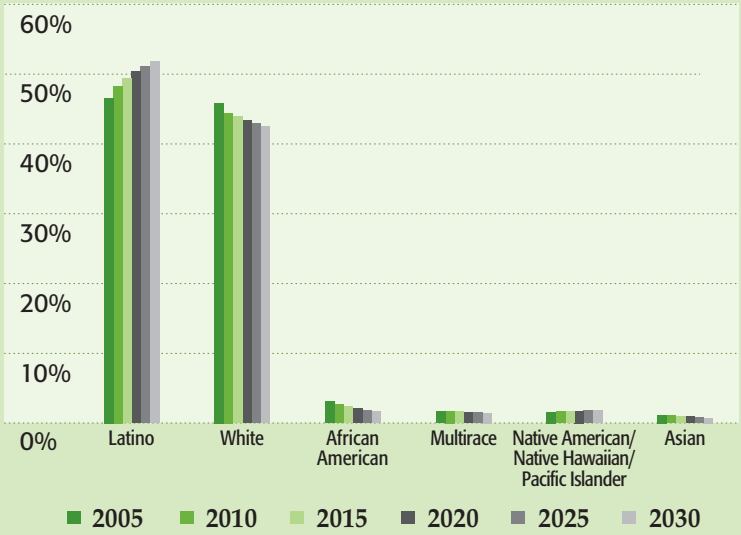

Table F7.
2005–2030 Projected Population by Race/Ethnicity (Number): Madera County

Year	Total	White	Latino	Asian	African American	Multirace	Native American	Native Hawaiian/ Pacific Islander
2000	124,696	59,198	55,213	1,595	4,843	1,923	1,746	178
2005	143,221	65,695	66,711	1,700	4,482	2,369	2,086	178
2010	162,114	72,080	78,295	1,799	4,402	2,858	2,494	186
2015	187,457	82,275	92,567	1,883	4,435	3,095	3,014	188
2020	212,874	92,218	107,180	1,953	4,451	3,352	3,532	188
2025	243,290	104,541	124,263	2,010	4,450	3,690	4,150	186
2030	273,456	116,312	141,680	2,063	4,445	4,026	4,745	185

Appendix F. (continued)
Population Projections by County

Figure F8.
2005–2030 Projected Population by Race/Ethnicity (Percentage): Mariposa County

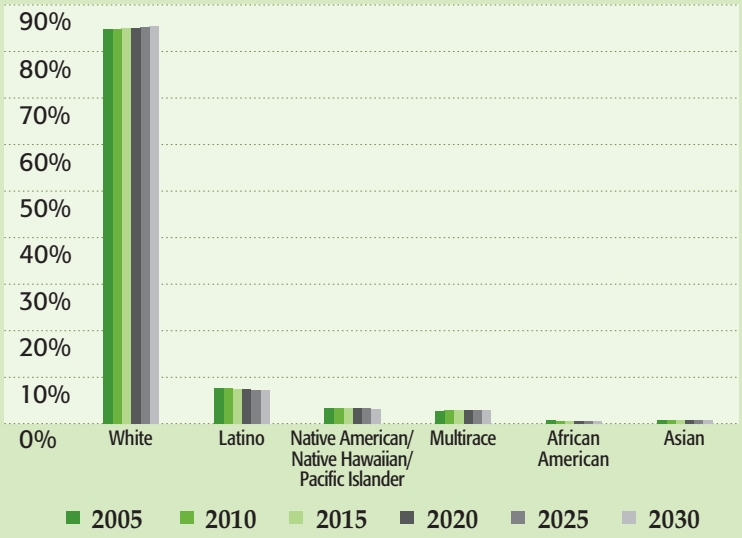

Table F8.
2005–2030 Projected Population by Race/Ethnicity (Number): Mariposa County

Year	Total	White	Latino	Asian	African American	Multirace	Native American	Native Hawaiian/ Pacific Islander
2000	17,150	14,514	1,350	143	121	440	560	22
2005	18,309	15,536	1,404	149	122	502	574	22
2010	19,108	16,190	1,458	159	122	542	615	22
2015	20,483	17,387	1,537	169	122	582	664	22
2020	21,743	18,487	1,609	178	122	618	707	22
2025	22,961	19,573	1,669	186	118	659	734	22
2030	23,981	20,499	1,709	191	116	694	750	22

Appendix F. (continued)
Population Projections by County

Figure F9.
2005–2030 Projected Population by Race/Ethnicity (Percentage): Merced County

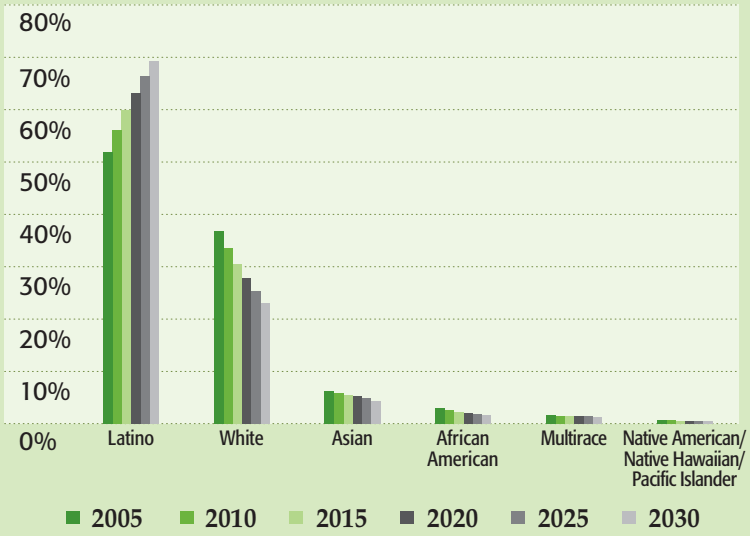

Table F9.
2005–2030 Projected Population by Race/Ethnicity (Number): Merced County

Year	Total	White	Latino	Asian	African American	Multirace	Native American	Native Hawaiian/ Pacific Islander
2000	211,481	88,105	95,961	14,738	7,718	3,475	1,177	307
2005	243,813	89,555	126,628	15,023	7,227	3,875	1,186	319
2010	273,935	91,799	153,698	15,949	6,920	3,987	1,232	350
2015	310,371	94,503	185,817	17,061	6,992	4,343	1,277	378
2020	348,690	97,109	220,060	18,055	7,009	4,756	1,306	395
2025	393,328	99,464	261,038	18,806	6,995	5,291	1,320	414
2030	439,905	101,543	304,592	19,191	6,984	5,847	1,321	427

Appendix F. (continued)
Population Projections by County

Figure F10.
2005–2030 Projected Population by Race/Ethnicity (Percentage): Mono County

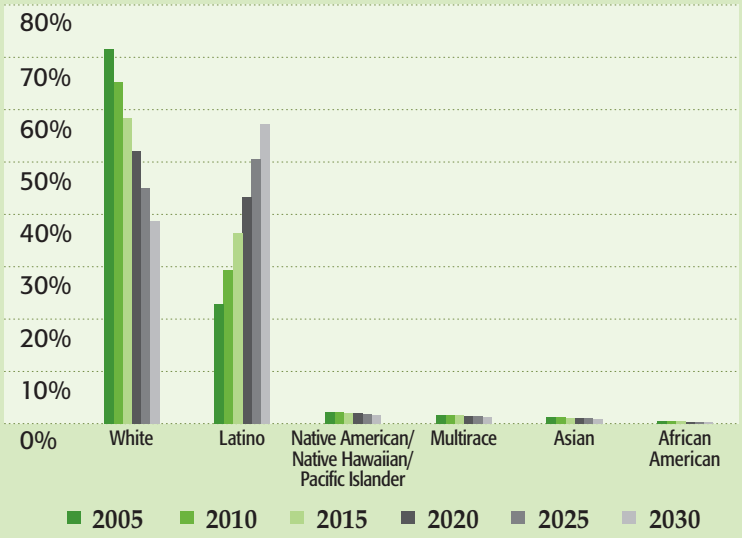

Table F10.
2005–2030 Projected Population by Race/Ethnicity (Number): Mono County

Year	Total	White	Latino	Asian	African American	Multirace	Native American	Native Hawaiian/ Pacific Islander
2000	13,013	10,015	2,295	155	67	194	277	10
2005	13,803	9,878	3,162	165	69	236	283	10
2010	14,833	9,682	4,348	175	69	246	303	10
2015	16,391	9,571	5,977	185	69	256	323	10
2020	18,080	9,397	7,805	195	69	266	338	10
2025	20,401	9,168	10,324	205	69	283	342	10
2030	22,894	8,858	13,106	211	69	298	342	10

Appendix F. (continued)
Population Projections by County

Figure F11.
2005–2030 Projected Population by Race/Ethnicity (Percentage): Monterey County

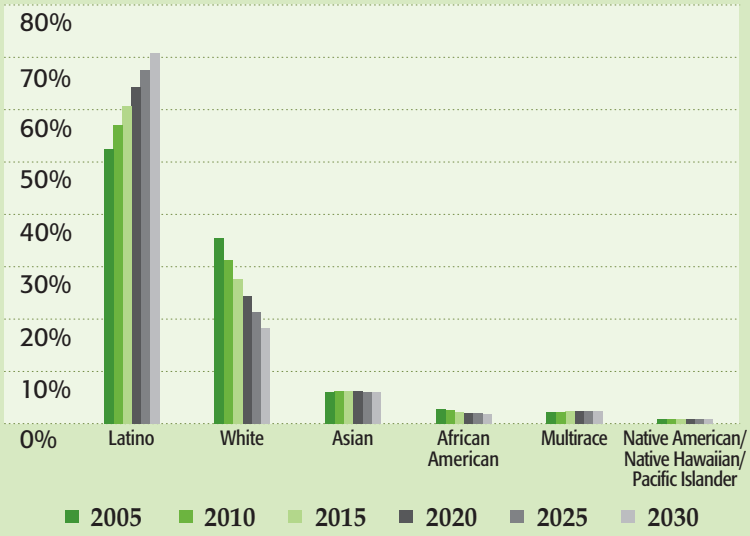

Table F11.
2005–2030 Projected Population by Race/Ethnicity (Number): Monterey County

Year	Total	White	Latino	Asian	African American	Multirace	Native American	Native Hawaiian/ Pacific Islander
2000	404,031	165,285	188,989	23,743	14,358	8,157	1,847	1,652
2005	422,506	149,744	221,824	25,550	12,101	9,628	1,925	1,734
2010	433,283	135,006	246,849	26,735	10,955	9,883	1,978	1,877
2015	454,405	125,752	275,480	28,245	10,412	10,438	2,060	2,018
2020	476,642	115,953	306,006	29,606	9,763	11,063	2,112	2,139
2025	502,659	106,697	339,461	30,675	9,622	11,802	2,159	2,243
2030	529,145	96,630	374,591	31,550	9,468	12,418	2,166	2,322

Appendix F. (continued)
Population Projections by County

Figure F12.
2005–2030 Projected Population by Race/Ethnicity (Percentage): San Benito County

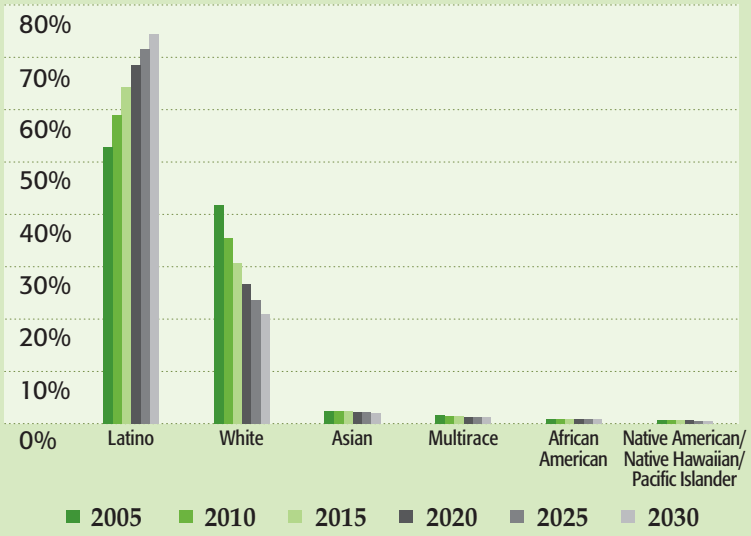

Table F12.
2005–2030 Projected Population by Race/Ethnicity (Number): San Benito County

Year	Total	White	Latino	Asian	African American	Multirace	Native American	Native Hawaiian/ Pacific Islander
2000	53,927	25,198	25,825	1,230	506	794	296	78
2005	57,534	23,968	30,369	1,364	527	923	305	78
2010	64,230	22,817	37,905	1,582	587	946	315	78
2015	73,587	22,501	47,234	1,749	659	1,001	365	78
2020	83,792	22,270	57,302	1,922	737	1,068	416	77
2025	93,474	22,105	66,898	2,006	802	1,142	445	76
2030	103,340	21,676	76,952	2,077	870	1,211	479	75

Appendix F. (continued)
Population Projections by County

Figure F13.
2005–2030 Projected Population by Race/Ethnicity (Percentage): San Joaquin County

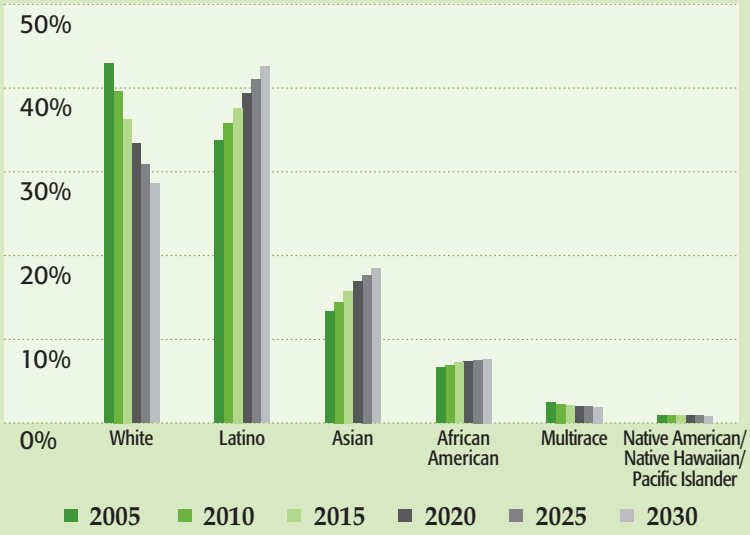

Table F13.
2005–2030 Projected Population by Race/Ethnicity (Number): San Joaquin County

Year	Total	White	Latino	Asian	African American	Multirace	Native American	Native Hawaiian/ Pacific Islander
2000	569,083	274,249	173,707	65,374	36,855	13,484	3,670	1,744
2005	662,014	283,988	223,537	88,025	43,810	16,428	4,364	1,862
2010	741,417	293,928	265,001	107,303	51,277	17,002	4,838	2,068
2015	848,136	307,845	319,121	134,005	61,146	18,119	5,641	2,259
2020	965,094	322,204	380,092	163,056	71,438	19,474	6,388	2,442
2025	1,081,143	334,145	443,261	191,371	81,608	21,176	6,976	2,606
2030	1,205,198	344,521	512,851	222,367	92,114	23,063	7,520	2,762

Appendix F. (continued)
Population Projections by County

Figure F14.
2005–2030 Projected Population by Race/Ethnicity (Percentage): San Luis Obispo County

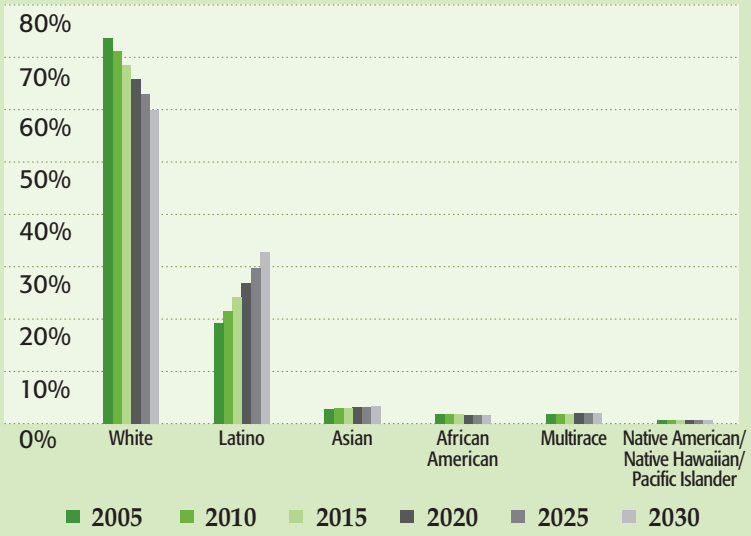

Table F14.
2005–2030 Projected Population by Race/Ethnicity (Number): San Luis Obispo County

Year	Total	White	Latino	Asian	African American	Multirace	Native American	Native Hawaiian/ Pacific Islander
2000	248,322	190,264	40,525	6,544	4,810	4,387	1,541	251
2005	261,243	192,537	49,886	7,207	4,862	4,912	1,576	263
2010	269,734	191,905	58,135	7,856	4,919	5,025	1,617	277
2015	281,470	192,741	67,984	8,517	4,952	5,328	1,653	295
2020	293,540	193,171	78,637	9,126	4,976	5,641	1,677	312
2025	305,372	191,995	90,624	9,806	4,987	5,963	1,676	321
2030	316,613	189,398	103,564	10,487	4,958	6,236	1,640	330

Appendix F. (continued)
Population Projections by County

Figure F15.
2005–2030 Projected Population by Race/Ethnicity (Percentage): Santa Cruz County

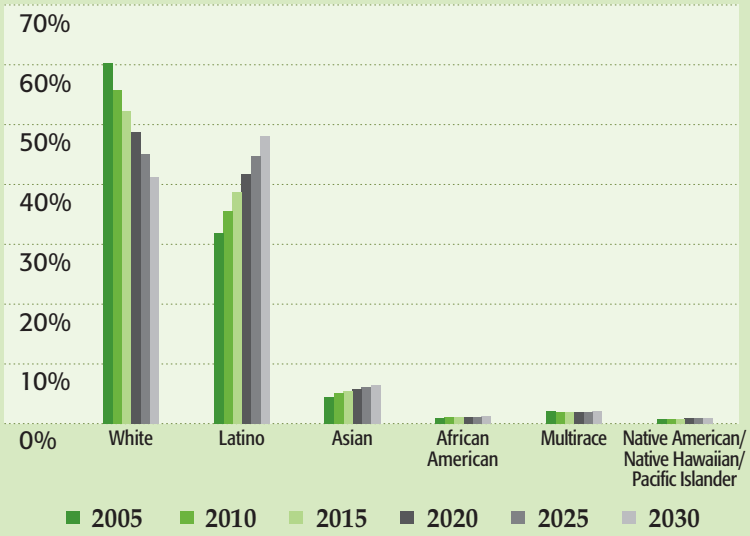

Table F15.
2005–2030 Projected Population by Race/Ethnicity (Number): Santa Cruz County

Year	Total	White	Latino	Asian	African American	Multirace	Native American	Native Hawaiian/ Pacific Islander
2000	256,695	170,221	68,816	8,676	2,246	5,134	1,266	336
2005	261,242	157,314	83,082	11,400	2,439	5,263	1,396	348
2010	268,016	149,546	95,178	13,491	2,715	5,190	1,528	368
2015	277,808	144,923	107,282	15,026	2,989	5,414	1,787	387
2020	287,480	139,942	119,705	16,501	3,228	5,655	2,042	407
2025	296,575	133,527	132,789	18,136	3,477	5,933	2,297	416
2030	304,465	125,449	146,486	19,663	3,714	6,201	2,532	420

Appendix F. (continued)
Population Projections by County

Figure F16.
2005–2030 Projected Population by Race/Ethnicity (Percentage): Stanislaus County

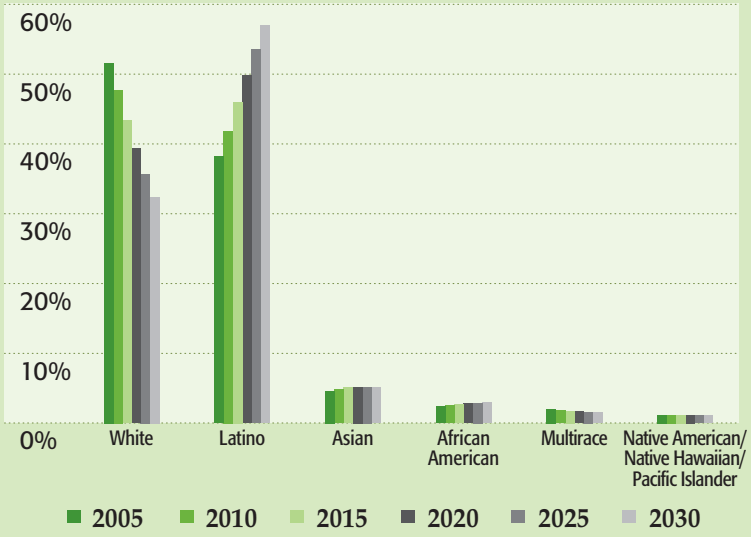

Table F16.
2005–2030 Projected Population by Race/Ethnicity (Number): Stanislaus County

Year	Total	White	Latino	Asian	African American	Multirace	Native American	Native Hawaiian/ Pacific Islander
2000	451,190	263,160	143,132	19,531	10,863	9,295	3,627	1,582
2005	510,612	263,505	195,218	23,633	12,034	10,287	4,224	1,711
2010	559,708	267,271	234,342	27,182	14,007	10,376	4,653	1,877
2015	626,534	271,523	288,156	31,759	16,703	11,059	5,302	2,032
2020	699,144	275,186	348,466	36,225	19,540	11,666	5,891	2,170
2025	776,490	277,374	415,533	40,258	22,373	12,263	6,396	2,293
2030	857,893	277,938	488,869	43,860	25,200	12,761	6,850	2,415

Appendix F. (continued)
Population Projections by County

Figure F17.
2005–2030 Projected Population by Race/Ethnicity (Percentage): Tulare County

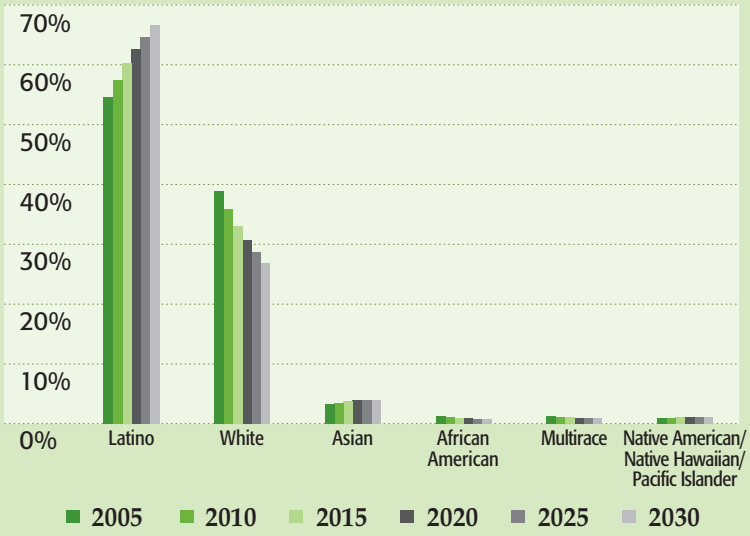

Table F17.
2005–2030 Projected Population by Race/Ethnicity (Number): Tulare County

Year	Total	White	Latino	Asian	African American	Multirace	Native American	Native Hawaiian/ Pacific Islander
2000	369,873	157,347	187,732	11,927	5,248	4,208	3,136	275
2005	416,503	161,955	226,967	13,698	4,942	5,006	3,652	283
2010	466,893	167,520	268,343	16,326	4,964	5,208	4,226	306
2015	531,171	175,557	319,751	19,672	5,250	5,584	5,021	336
2020	599,117	183,761	374,740	23,047	5,436	5,996	5,771	366
2025	669,452	191,490	432,755	26,375	5,544	6,442	6,460	386
2030	742,969	198,978	494,211	29,774	5,639	6,855	7,109	403

Appendix F. (continued)
Population Projections by County

Figure F18.
2005–2030 Projected Population by Race/Ethnicity (Percentage): Tuolumne County

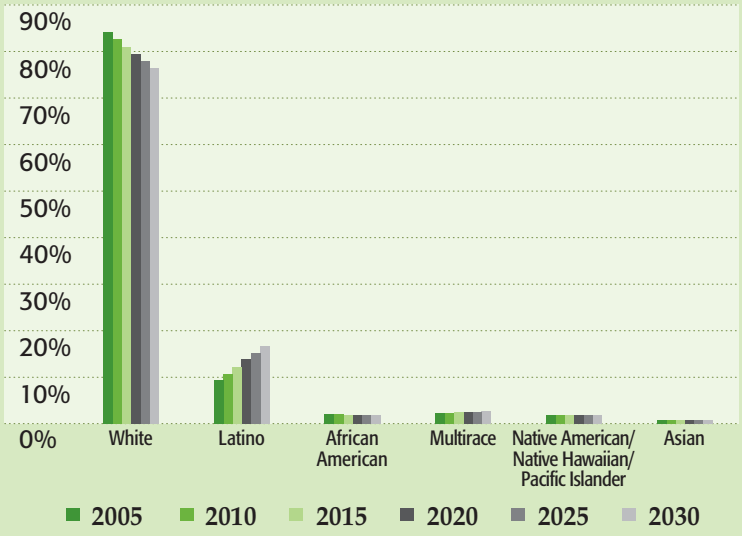

Table F18.
2005–2030 Projected Population by Race/Ethnicity (Number): Tuolumne County

Year	Total	White	Latino	Asian	African American	Multirace	Native American	Native Hawaiian/ Pacific Islander
2000	369,873	157,347	187,732	11,927	5,248	4,208	3,136	275
2005	416,503	161,955	226,967	13,698	4,942	5,006	3,652	283
2010	466,893	167,520	268,343	16,326	4,964	5,208	4,226	306
2015	531,171	175,557	319,751	19,672	5,250	5,584	5,021	336
2020	599,117	183,761	374,740	23,047	5,436	5,996	5,771	366
2025	669,452	191,490	432,755	26,375	5,544	6,442	6,460	386
2030	742,969	198,978	494,211	29,774	5,639	6,855	7,109	403

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